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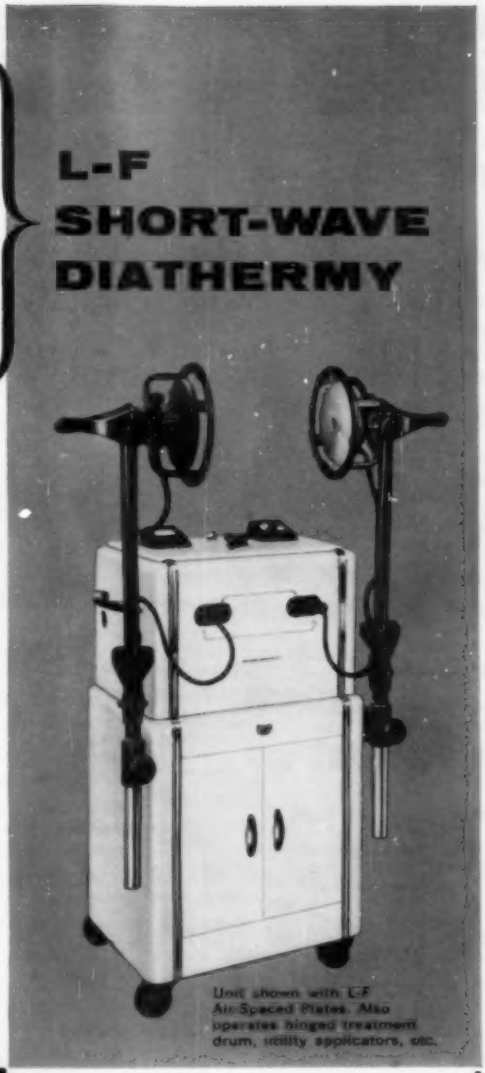

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The *Physical Therapy Review* is published monthly by the American Physical Therapy Association, 1790 Broadway, New York 19, N.Y. Reentered as second class matter August 11, 1949 at the post office at New York, N. Y., under the act of Congress of Aug. 24, 1912.

Subscription rates: $6.00 per year to nonmembers: $6.75 in Canada and foreign countries. Single copies 75¢; to members 50¢; back issues 50¢.

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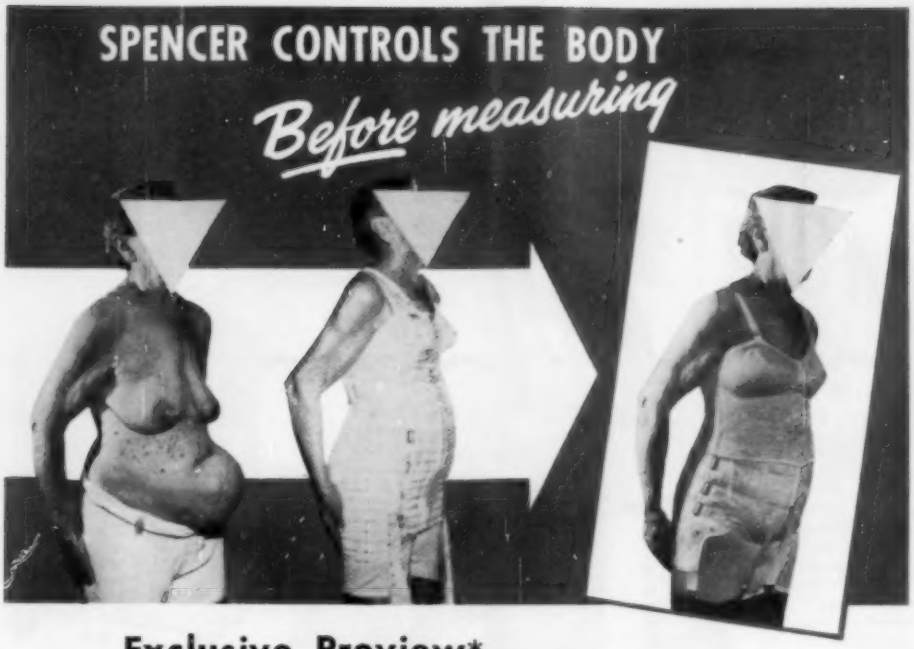

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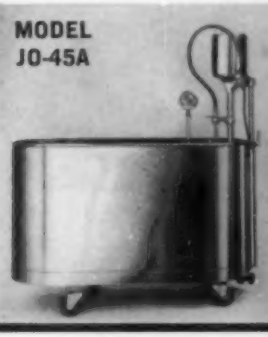

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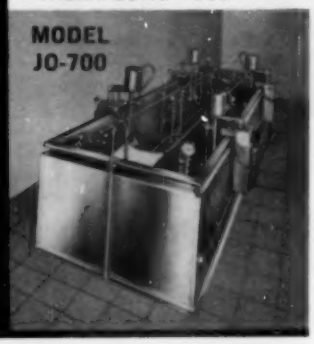

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Advanced Course in Physical Rehabilitation Methods	NYU-Bellevue Med. Cen. and NYU Sch. of Education	Mrs. Edith Lawton, Dir. Courses for Physical Therapists Institute of P. M. & R. 400 E. 34th Street New York City, N. Y.	Nov. 17—Dec. 12, 1958 Feb. 2—Feb. 27, 1959 Apr. 27—May 29, 1959
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Neurophysiology in the Treatment of Neuromuscular Dysfunction	University of Southern California	Prof. Margaret S. Rood Univ. of Southern California University Park Los Angeles 7, California	Nov. 3—21, 1958
Functional Bracing of the Upper Extremities	U. of California and U. S. Office of Vocational Rehabilitation	Prosthetics Education Program Rm. B4-229, Medical Center University of California at Los Angeles 24, California	Nov. 17—21, 1958 Feb. 16—20, 1959 Apr. 20—24, 1959
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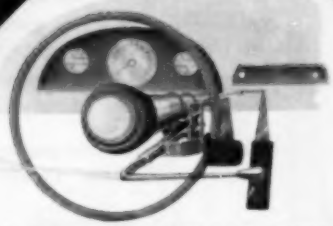

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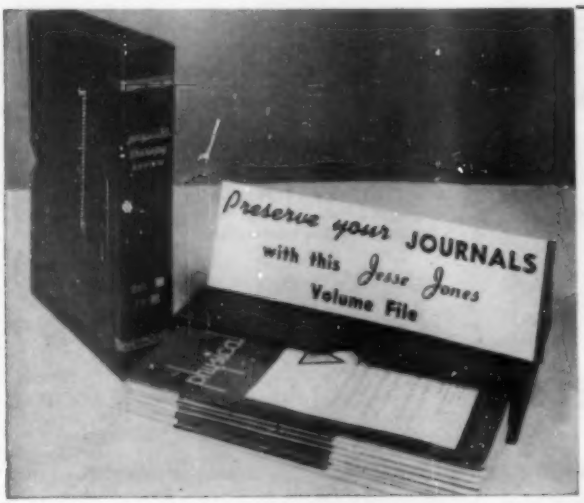

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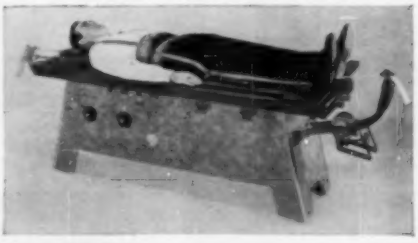

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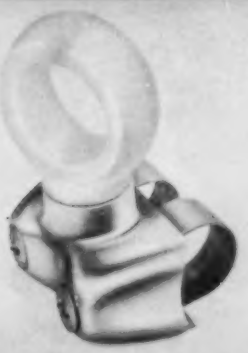

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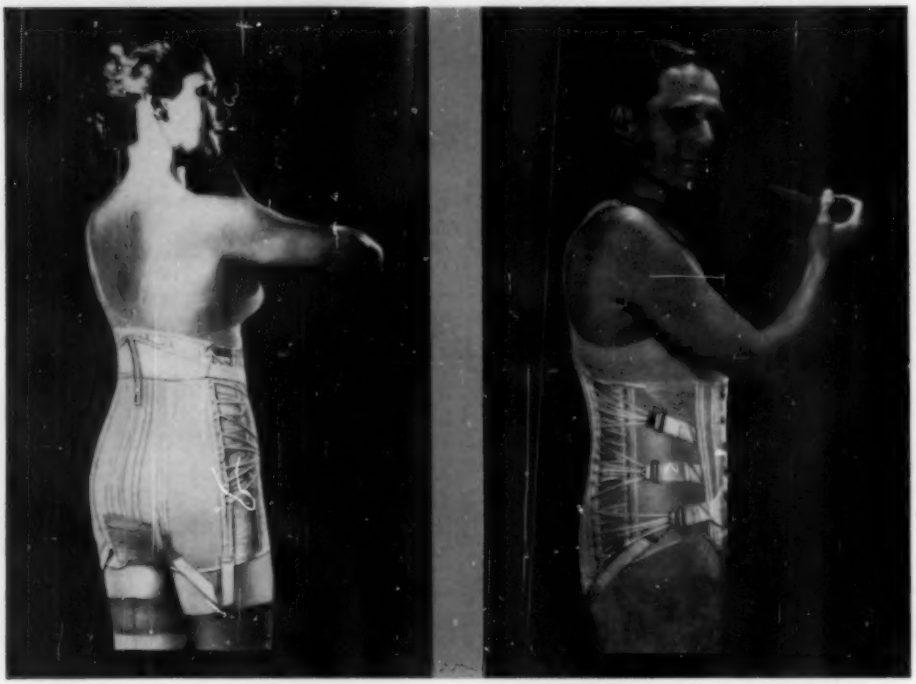

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Development of Bilateral Muscular Strength Through Ipsilateral Exercise

Lois M. Wellock, Ph.D.

The case for active exercise to increase muscle strength has already been well established. The type of exercise in which the patient is willfully moving the disabled part has been shown to give an increase in muscle strength in the involved muscles within the physiological boundary. However, for conditions for which immobolization is absolutely necessary—such as unhealed fractures, recent surgery, severe pain or muscle spasm, or joints incapacitated for any reason—there is need for another method for developing muscle strength. This method of muscular strength development is available through the process of cross education. To define the term: *cross education* is the education of one body part through the education of another body part. In this particular study the term refers to the process of increasing muscular strength in other muscle groups through a program of manually applied graded resistance exercise for the right knee flexors.

Review of Literature

A review of literature shows that the term cross education was first used by Scripture[1] in 1894. He revealed that through training of hand grip on one side there was an associated increase in grip strength on the other side. This appears to be the first reference which discusses increase in strength of muscle groups in a limb opposite that of the limb specifically exercised. Other researchers shortly afterward worked on problems involving transfer of learning from one limb to another. Davis[2] (1898) found that training in speed tapping with the great toe gave an improvement in speed tapping on the other side of the body. Also that development of accuracy in hitting a mark with a fencer's foil was transferred from the foil-using right arm to free left arm. Davis concluded from his work that: 1) effects of exercise may be transferred in varying degrees from practicing parts to other parts of the body; 2) there is a close connection between different parts of the muscular system through nervous means—this relation being closer between parts related in function or in position; 3) there is a greater resistance to fatigue and an increase in the size of the muscles on the "unpracticed" side due to a "spread of the nervous impulse to the motor centers governing the unused part or by a spread of the impulse to the muscles themselves, so that the apparently unused part might actually be receiving practice."[2] Other early and more recent work has been done on transfer of training in learning situations.[4] These works will not be given further attention at this time, since it is development of muscular strength through cross education, rather than transfer of training, with which this presentation is concerned.

Wissler and Richards (1900)[5] studied bilateral

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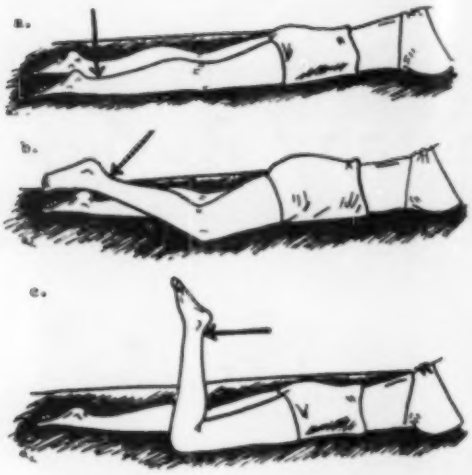

Figure 1. Exercise Technic

a. Downward pressure at ankle sufficient to prevent attempted knee flexion by subject.
b. Downward pressure released sufficiently to allow flexion against the resistance.
c. Break test given against "set" flexor muscles.

accessory movements accompanying a particular unilateral motion. They found that through a daily exercise of one-handed pulling on a dynamometer, the muscular performance in the accessory muscles—that is muscles not directly used in the performance of the exercise—increased. This again was measured as performance not as strength. Cross education was explained to be a result of diffusion of movement. These investigators suggested that we cannot say there is *no* contraction taking place in closely related muscles when another closely related muscle is active.

In a study of "associated movements" demonstratable in spastic hemiplegic patients, Walshe[6] (1923) showed that the paralyzed arm of a hemiplegic could be made to move through movement of the normal arm, and concluded that associated movements of a hemiplegic are, in effect, postural reflexes aroused by the forceful contractions which demand widespread synergic fixation of the muscles. Hellebrandt[7] (1947) also presented this explanation in the support of the phenomenon of cross education.

Of the theories advanced as explanation of cross education the consensus appears to be that there is diffusion of motor impulses to both ipsilateral and contralateral muscles when a particular muscle acts against resistance. A difference of opinion exists as to how much resistance must be acted against, and how strenuously the muscle must be called upon to act. Whether or not the muscle must be exercised to exhaustion in order to obtain cross education is also controversial. Most studies show agreement in that the improperly named "unpracticed" side is receiving some nervous impulses during the exercise of the contralateral side. Whether such impulses come from overflow or spread of nervous impulses, from higher centers of learning, or from reflex mechanisms is still open to study.

Many of the workers considered strength development resulting from cross education only incidently and have measured such development in terms of endurance and/or ability to perform a certain motor pattern. Consequently the measurement of muscular strength, *per se*, achieved through cross education has not been given much attention. There is a lack of evidence in the literature of methods for development of strength through cross education that are feasible and clinically applicable to the patient with musculature rendered nonfunctional by disease and/or trauma. Some previous work has indicated that it is necessary to require the exercised part to perform to the point of exhaustion or against extreme resistance if cross education is to result in an increase of muscular strength. The type of exercise used in some experiments on cross education which showed increased endurance and incidental strength development was of such a nature that the regime could not easily be done by other than superb individuals willing to undergo discomfort for "science." Hellebrandt[8] (1956) concluded there was very little evidence in support of the validity of the currently popular technic used clinically for developing strength.

Thinking in terms of physical therapy, patients for whom strength development through cross education could be desirable and effective are frequently unwilling or incapable of undergoing a strenuous ordeal. There is need for less strenuous methods of developing strength through cross education, methods that can safely be used with the physically incapacitated person which permit performance within the tolerance and capacity of the individual patient at the time the strength development is indicated.

Two of the recent investigators, Darcus and Salter[9] (1955), suggested that exercise to the point of exhaustion by overloading *might not* be necessary in order to obtain such strength development.

THE PROBLEM

This study was undertaken in the belief that bilateral development of muscular strength could be produced through cross education by participation in a program of manually applied resistance exercise which avoided exhaustion, fatigue or heroic, distasteful effort. Hellebrandt[10] indicated, and it was reaffirmed by Elkins[11] and Darcus,[12] that a rest of 60 seconds between contractions was amply sufficient for recovery, and the avoidance of fatigue. Therefore, the problem selected for study was to determine the *amount* of muscular strength that could be developed in certain related muscle groups through a tolerable and nonfatiguing program of manually applied progressive resistance exercise applied to the knee flexor muscles of the right lower extremity.

The assumptions were that concomitant to increase in the strength of the right knee flexors, there would be an increase in the strength of:

1. the contralateral knee flexors (left);
2. the contralateral antagonistic muscles (left knee extensors); and
3. the ipsilateral antagonistic muscles (right knee extensors).

PROCEDURE

The subjects studied were 2 male and 18 female physical therapy students at Northwestern University Medical School. Statistically equated control and experimental groups were used, with the experimental group exercising the right knee flexors 3 times a week for a period of 12 weeks. The control group received no special training.

The exercise technic and procedure for the experimental subjects were as follows: As shown in figure 1-a, the subject lay prone. All subjects placed their hands on the table but did not grasp the table. On the command "Hold" the subject was gripped at the ankle by the research assistant and sufficient downward pressure was given so as to prevent flexion of the right knee as attempted by the subject. After 3 or 4 seconds, on the command "Move" as shown in figure 1-b, the assistant released his downward pressure sufficiently to allow movement by the subject through the range of flexion. Pressure opposing the movement was maintained sufficiently to ensure contraction against maximum resistance. That is, the force exerted by the assistant was only slightly less than that necessary to prevent motion. The command "Break" was then given and the subject was allowed time to *set* the muscles and prepare himself against a pull in the opposite direction. As shown in figure 1-c, the downward pull toward extension was then exerted by the assistant with enough pressure to break the hold of the subject and so as to force the lower leg back to the original position of extension on the table. The subject resisted the downward pull as long as possible.

A rest period of 60 seconds was allowed before the command for repeating the procedure was given. This entire procedure was done 5 times the first exercise period, 8 times the second, and 10 times for the third and each succeeding period. A total of 36 exercise periods was given. Since there has been considerable discussion as to the merits of static (isometric) versus dynamic (isotonic) muscle contraction, both types were used in this study; the subject moved against resistance and held against the "Break."

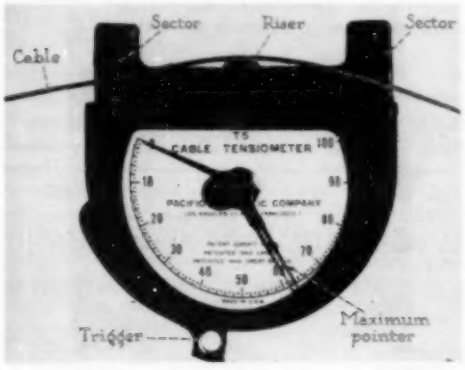

Figure 2. Testing instrument—medical tensiometer

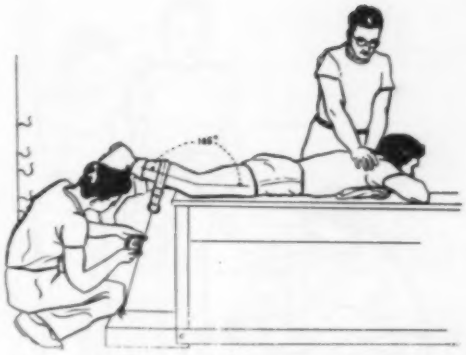

Figure 3. Starting position for knee flexion testing. *(Reproduced from* Cable Tension Strength Tests *by permission of the author, R. Harrison Clarke.)*

Figure 4. Starting position for knee extension testing. *(Reproduced from* Cable Tension Strength Tests *by permission of the author, H. Harrison Clarke.)*

TESTING

The testing instrument, figure 2, was a medical tensiometer.[13] This instrument is an adaptation of a cable tensiometer originally designed to measure the tension of aircraft control cable. Cable tension is determined from the force needed to create offset (on riser) in a cable between two set points (the sectors). Instrument readings are converted into pound readings by means of a calibration chart. Since strength can be defined as the ability of a person to exert single explosive force against an object,[14] the selected instrument could measure the amount of strength exerted by the muscle group under test.

The tests were administered using the technic and method found most effective by Clarke[15] and described in his manual.[16] Flexion, as shown in figure 3, was tested with the subject prone, head resting on hands, and with the right knee flexed to 165 degrees. A strap was placed around the leg midway between the knee and ankle joints and was attached to a hook below and at the lower end of the table by means of a cable. The tensiometer was then placed on this cable to record the pull.

Extension, as shown in figure 4, was tested with the subject sitting, in a backward leaning position, arms extended to the rear, and with hands grasping the sides of the table. The right knee was in 115 degrees of extension. A strap placed midway between the knee and ankle joints, was again attached by means of a cable to a hook at the lower end of the table, and used in a similar manner as in the flexion test.

Initial testing was done bilaterally on the knee flexor and extensor muscles for all 18 subjects. Retesting was done bilaterally once a week on the knee flexor muscles; and in the third, fourth, eighth, and twelfth week on the extensor muscles of all 18 subjects.

CONCLUSIONS AND SUMMARY

The objective of the study, namely, to determine the amount of bilateral muscular strength that could be developed through a clinically acceptable program of progressive resistance exercises to one muscle group, was met. Three of the assumptions were proven statistically. Figures statistically supported at the 5 per cent level of confidence were obtained for the increase in the pound-pull strength for the right knee flexors, the right knee extensors, and the left knee extensors. The fourth assumption—that there would be an increase in the left knee flexor muscles—was shown to be of practical significance, but not proven statistically. In the control subjects there was no statistically significant increase of strength in any of the muscle groups studied.

Based on the findings the following conclusions are advanced:

1. Muscular strength was developed in an exercised muscle group through manually applied graded resistance exercise. Recovery time was allowed between contractions so as to rule out fatigue.
2. Muscular strength was developed, through cross education, in the ipsilateral antagonists and the contralateral muscle groups.
3. In the experimental subjects the following mean increases in strength were shown.

TABLE 1.

Muscle group	In pull pounds			per cent improvement
	1st week	12th week	increase	
Right knee flexors	105	153	48	46*
Left knee flexors	106	132	26	24
Right knee extensors	96	152	52	58*
Left knee extensors	99	151	52	52*

* Significant at the 5 per cent level of confidence.

In summary, an experimental group of 10 subjects exercised their right knee flexors against manually applied graded resistance. Muscular strength increased in the exercised muscles and, through cross education, in the ipsilateral antagonists and the contralateral knee flexors and extensors. The control group of 8 subjects showed no statistically significant increase in the muscle strength of any of the four muscle groups under study.

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An Active Relaxation Technic for Pain Relief

James E. Griffin, M.A.

INTRODUCTION

Active relaxation as a useful method for relief of pain has evolved through the lifetime work of Edmund Jacobson [1] and through the work of Rathbone, [2, 3] Young,[4] Lorenz and Musser,[5] Johnson,[6] Goldberg and Doppelt,[7] and others. A worthwhile review of the concepts of relaxation in general has been published by Jones.[8] Active relaxation may be defined as any technic to achieve relief of muscle tension which the patient is taught to perform by himself and which requires him to learn to distinguish between the presence and absence of muscle tension.

Interested physicians have come to understand the value of active relaxation as a preferred method in selected patients to use of sedation or tranquilization, and have passed this knowledge on to other professional personnel. Refinement in technic has occurred as a result of experience by physical therapists who have had occasion to teach voluntary relaxation under the physician's guidance. Such technics help to relieve or minimize the pain which sent the patient to the physician.

The technic which was used on the cases cited in this paper is briefly:

1. The patient is told to lie in a comfortable position on a bed. He is then instructed to perform vigorous isotonic or isometric muscle contractions of increasing intensity interspersed with brief rest periods. This

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should be performed in relation to pain-free muscles or movements until there is clearly fixed in the patient's mind the difference in sensation between muscles under great tension as compared to the feeling of release. Most patients volunteer a description of warmth or heaviness following such intense activity.

2. The patient next strives to achieve an equivalent difference of sensation using moderately intense muscle contractions a lesser number of times.
3. The patient tries to attain this feeling of difference in sensation by merely thinking about contracting various muscle groups and then letting go or releasing.
4. The patient tries to use the above three steps in areas that produce pain on motion, particularly when the pain is known to be due to old trauma, with or without psychogenic overlay.

This technic was derived in desperation after the more commonly used methods of relieving a chief complaint of excessive blushing were tried without benefit to a patient. His history was as follows:

D.J., age 28, a white single male, had worked as a wire service writer. He was inducted into the Armed Forces in 1952, receiving a discharge in 1953 because of intense and persistent blushing whenever he felt that anyone was looking at him. On discharge he voluntarily committed himself to a Veteran's Administration mental hospital. He described his treatment there as "some form of psychotherapy." He was discharged, unimproved, after nine months. The patient then took a job as a surveyor's assistant in order to avoid being around people as much as possible. After a period of time he was referred to a physiatrist by his family physician. General active relaxation was prescribed, with the patient being made fully aware that this was an experimental procedure insofar as his complaint was concerned.

Within three months, having been seen two times per week for an hour each time, and practicing faithfully at home, the patient reported that he no longer blushed in commonplace situations. After he had completely mastered the steps previously outlined he was instructed to think of transferring blood from his face to his feet whenever he thought a blush was coming on. He was instructed that he could tell if he were successful in this transference if he felt his feet getting warmer. Within six months the patient reported that he could be active in crowds without fear of blushing. He then resumed newspaper work and began to contemplate marriage. The patient was discharged from treatment at this time upon his promise to continue to practice relaxation regularly, so that he might continue to obtain the desired change in sensation. Checkup six months later disclosed that he continued to be comfortable in most situations and was only occasionally bothered with sensations of blushing. His family concurred that this was so.

CASE STUDIES

The apparent success of general active relaxation with this patient who blushed led us to try the technic with patients whose chief complaints were intermittently painful joints of many years duration. In the cases cited, X rays and histories confirmed the diagnosis of traumatic osteoarthritis. In all cases in which active relaxation was used to relieve pain, the patient's functional capacity was less than would be expected in relation to the pathological findings. The history and course of treatment of two cases are given.

E.A.S., age 48, a married female, who was a lawyer by profession, had had a congenital dislocation of the left hip, surgical repair having been done during childhood. She suffered gradually increasing pain about the hip joint and thigh as she grew older to the extent that she could not take more than a few steps without excruciating pain although she leaned heavily on a cane. She was followed by her physician regularly with repeat X rays as pain increased. There were no discernible bony changes until, when in her forties, she had a bad fall, landing on her left hip. Then there was rapid onset of necrosis of the acetabulum, femoral head, and upper third of the femoral shaft, with marked spur formation in these areas. A myectomy was performed with removal of muscle tissue over the worst of the spurs. The muscle biopsy was reported to be negative. The patient was cautioned by her orthopedist to restrict her physical activity as much as possible because another fall would probably result in fracture and bedridden invalidism. Upon recovery from surgery she was referred to a physiatrist. He found marked limitation in all ranges of motion of the hip, more so on active than passive movement, moderate atrophy of the thigh and buttock, and structural scoliosis. By this time her pain was so severe as to awaken her during the night, as well as to limit greatly her ability to walk. The patient had undergone almost continuous psychoanalysis for the previous 10 years.

The physiatrist prescribed general active relaxation plus specific active and passive exercise to increase the range of motion in the hip. There was also a concerted effort made to encourage the patient to wear low heeled shoes so as to minimize the possibility of another fall. When first referred for physical therapy the patient was seen five days a week, for a half hour each day. Within the first three months there was a moderate decrease in pain on ambulation, marked increase in strength

of hip and thigh musculature, but essentially no change in range of motion. The patient then went on vacation and her pain increased in severity, presumably due to greatly increased physical activity. On return from vacation and resumption of treatment there was a steady decline in pain so that within six months from the time that treatment was first started she discarded her cane and was able to walk with a vastly improved gait for distances of three blocks. Improvement in range of motion was slight. Treatment was gradually reduced to one time per week as the patient came to accept the fact that she would have to continue indefinitely to perform exercises after relaxation. Treatment was discontinued after 21 months. Checkup six months later revealed that her gait and posture had deteriorated slightly, but there had been no return of pain. She refused to have follow-up X rays taken. Psychoanalysis is continuing.

E.K., age 63, a housewife, had received multiple fractures of both lower extremities as a result of an automobile accident in 1944. Appropriate orthopedic and physical medicine were given at that time with uneventful recovery. There was no residual pain, or loss in range of motion or strength. There had been a trimalleolar fracture of the right ankle in which over a period of years there had been increasing intermittent pain and tenderness to touch, at times so severe that ambulation was impossible. Reflex protective splinting resulted in the patient walking with a very awkward gait. She began to have bouts of cramp-like pain in both lower extremities and trunk, not related to ambulation, which frequently awakened her. General active relaxation, to be followed by Frenkel's coordination exercises, was prescribed in the spring of 1956. The patient began a treatment program two times weekly for an hour at a time, which was decreased to one time per week within six weeks. She practiced her relaxation and coordination exercises daily. Within the first month of treatment the patient reported marked reduction of pain in the right ankle while walking, lessening of frequency of the cramp-like pain, a gain in general strength, endurance and coordination, as measured by delaying onset of fatigue and/or pain while doing house work or shopping. She then took a vacation of six weeks, during which there was no interference with any physical activity she desired. There was no increase in pain. On return to her normal duties ankle pain increased slightly. Then as treatment continued the pain dropped to a persistent low level. In trying to lower the residual level a course of ultrasonic therapy to the ankle was prescribed, with no benefit. She was then started on daily paraffin bath and was taught how to use this at home. This essentially relieved completely the residual pain in her ankle. Instruction in relaxation and coordination exercises were discontinued nine months after treatment began. Checkup one year later indicated there had been no return of pain. The patient had continued to practice relaxation.

Discussion

In both cases what appears to have been achieved was the training of the patients in how to use their muscles more efficiently, thereby obtaining pain relief from a chronic pathology. The patient has to be thoroughly oriented to the fact that when muscles are moderately hypertonic and incoordinate over a period of time the normal contraction-relaxation reciprocity of prime mover and antagonist is attenuated resulting in diminished joint motion and related symptoms.

One way to make a patient aware that his muscles are hypertonic is to have him perform brief bouts of hard work with the muscles of nonpainful areas. The bouts of work are interspersed with short rest periods. This cycle of activity and inactivity will, usually, in a short period of time produce within the patient a recognizable change in sensation in the areas that have been made to work. As the patient becomes aware of this change in sensation he is ready to try to obtain similar change in painful areas, using the same technics. It has been observed clinically that if uninvolved areas are relaxed first this vigorous procedure does not give rise to pain when it is applied to muscles the use of which previously caused marked increase in pain. When the patient has achieved change in sensation within painful areas and no longer has fear of pain, he can perform the desired motion with diminished and finally absent unpleasant sensation. In due time he becomes able to "think-relax" and proceed with comfortable motion. At this stage, before he changes the direction of joint movement he must consciously change his impulse pattern so that muscles previously contracting now relax, and those formerly at rest now contract. This requires that the patient be taught the elementary anatomy of the area to be worked on. With continued practice the conscious shift prior to change in direction of motion becomes automatic and the patient becomes able to perform instead of being preoccupied with the possibility of pain.

To give a specific illustration of the above points, suppose a patient complains of pain in the hip on walking, and the physician determines that the pain is most pronounced during hip flexion. An effective procedure would be:

1. With the patient comfortably supine instruct him to alternately contract and relax gluteal muscles.
2. Then hip flexion may be done, passively first, then actively. Because of relative

lack of opposition from the hip extensors there will be less pain.

3. When there is to be movement from flexion into extension the patient should be instructed to think about the muscles involved and their actions before the motion is performed. Because of the position of his body he is told to visualize the hip flexors as lengthening rather than shortening. A little resistance may be necessary to the extensor movement, at first, in order to produce effective change in flexor muscle activity.
4. After the patient has learned to perform pain free active motion in the supine position which permits concentration on relaxation, then he is ready to perform the motion from a functional position. He is now ready to flex the hip from the erect position, as always, consciously directing the activity of his hip flexors and extensors. By this time change in sensation will be automatic and all movements will have become habitually slower than they were at onset of treatment.
5. The patient should try walking normally and as long as he moves slowly there may be no pain. During more rapid movement pain may occur, but upon ceasing activity he can minimize the severity and duration of pain by thinking about letting himself relax in the painful area. Obviously he should be warned about the likelihood of pain on fast motion in normal activity before such an incident occurs.

The visualization outlined in step 3. appears to permit enough relaxation so that even though hip flexors are having to control the return to extension the pain previously present on return to the starting position is now diminished. With practice pain during either shortening or lengthening contractions will cease. Active relaxation of the antagonistic muscle group appears to be particularly valuable where evidence of osteoarthritis is present. Perhaps this relaxation procedure aids in widening transiently the chronically narrowed joint space.

There is another aspect of this type of relaxation which the physical therapist may wish to consider. It is my opinion that one reason for relief of pain by such technics is that the patient has ample opportunity to divert his mind from problems currently present but not immediately solvable through concentration on relaxation. This in itself should reduce the patient's muscle tension and diminish the pain. Obviously, if this be so, it would in no way alter such psychopathology as might be present, but it could reduce somatic dysfunction arising from emotional distress. The physical therapist should be aware of the possibility for it will greatly influence his orientation and instruction to the patient, but he should not discuss the matter with the patient.

SUMMARY

1. One way in which active relaxation has been used clinically is outlined.
2. Two patients whose chief complaints were due to chronic osteoarthritis and who did not obtain pain relief through surgical procedures or other forms of physical therapy are described and their management discussed.
3. The relaxation technic which was used as an aid to achieve relief of pain is discussed.
4. Some possible reasons as to why active relaxation was successful in these cases are given.

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COMMENT: The author has presented empirically results obtained by using a particular technic which he has found helpful. He is dealing with a problem of tremendous importance to those treating neuromuscular skeletal disorders when increase in muscle tone is distressing equally to the patient and the therapist. Autohypnosis is a technic which can be taught and reproduced and has been helpful in elevation of pain threshold and in relaxation. If the procedures presented in this paper can be reproduced effectively they form a technic which therapists should add to their armamentarium for special cases.

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The Physical Therapy Licensing Test: A Five Year Report*

Lillian D. Long, Ph.D.

Five years ago the American Physical Therapy Association initiated a program to develop a written test for use by state boards in the licensing of physical therapists. Members of your Association, in a variety of roles, have participated in every one of its developmental stages. Some of them saw the advantages of preparing a licensing test to be made available to all state boards and initiated the program, others wrote the questions and reviewed them, others assembled the examinations, still others approved their use for licensing; and, finally, the ultimate consumers, with perhaps a shade less free choice in the matter, took the tests and are taking them to prove their fitness to be physical therapists.

The role of the Professional Examination Service in this process has been, by and large, a technical one. Psychologists have devised special methods of testing which are used to evaluate achievement in education, aptitude for a variety of endeavors, suitability for employment and, at the highest level, fitness for professional practice.

When the American Physical Therapy Association decided in 1953 to work with the Professional Examination Service on the preparation of a licensing test, it was prompted to do so by the passage of licensing legislation in an increasing number of states and by a desire to provide a service which would help to make that legislation effective. The decision to offer licensing examinations directly to state licensing boards was based on the following considerations.

Foremost among these is the fact that state boards have the legal responsibility for licensing. Any participation in the licensing process which fails to take this fact into consideration is an obstruction to the boards' fulfillment of their obligation. If a profession seeks to be licensed, it should do everything in its power to enhance the dignity of the process through the legally designated channels. The recognition of this fact was of paramount importance in the decision to offer a licensing test to state boards which they might use or not as they saw fit, which they would themselves administer, and the results of which they might employ as they determined to help them decide who should be licensed.

But why is a licensing test itself—particularly one of the type prepared—of especial utility? The answer to this question requires a further consideration of the facts of licensing. The values of licensing are apparent. Licensing protects the profession and protects the recipients of the profession's services. There are, however, two aspects of licensing which create problems for every profession. The first is that it is extremely difficult to evaluate professional competency. The second is that whereas licensing is statewide, professions have a nationwide orientation. The problems created for a profession by the existence of as many as fifty different laws and licensing boards are themselves twofold. They are the difficulties of maintaining a national standard of competency in spite of the diversity of licensing practices, and of preventing unreasonable restrictions on the freedom of the members of a profession to move from state to state. An inspection of the annual programs of federations of state boards of one profession after another reveals an inordinate amount of time given over to the discussion of reciprocity and endorsement, or, more properly, the lack of these. The magnitude of this problem seems to increase with the years, and professions with a long history of licensing count it as a blight, and one for which it is difficult to find a remedy. Your profession is just now in the process of securing licensed status. If you can prevent these difficulties, it will be a boon to yourselves and to those who follow after you.

A solution is suggested if the two problems are viewed together—namely, the problem of properly evaluating professional competency, and the problem of reconciling statewide licensing programs with nationwide professional interests. It does not seem to me to be too fanciful to suggest that the very difficulty of achieving a valid measure of a person's ability has caused state boards to take

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* Presented at the Annual Conference of the American Physical Therapy Association, Seattle, June, 1958.

a narrow view of each other's efforts. It may well be that a board's conscious or unconscious reservations about its own methods of evaluation are expressed by a rejection of the procedures of other boards.

The hazards and complexities of the examination of candidates for public service are as ancient as public service. It is comfortable to note at the safe distance of 1,200 years that written examinations for public position were taken so seriously in China during the T'ang dynasty that dishonesty in taking or judging a test was often punishable by death. The tests which the courageous Chinese examiners had to judge were, of course, of the essay type. When one considers how difficult it is for two honest judges to agree on the evaluation of an essay test, respect for the bravery of these ancient examiners grows. Modern psychological literature reports numerous studies of the disagreement among judges in the evaluation of the same essay test and even disagreement among a single judge's successive evaluation of the same material. It may be suggested that this difficulty in judging essay tests lies at the very heart of the problem of professional evaluation and that it lies also at the heart of the problems that have attended state licensing. As long as there is no way to measure professional competency so that a grade is obtained which all judges will agree is correct, there is likely to be insecurity about one's own licensing procedures, and mistrust of others.

Only within the last forty years has a science of testing developed which has put a more valid and a more reliable instrument in the hands of all who are confronted with the burden of assessing another's ability. It was the hope of the American Physical Therapy Association that a licensing test based on these principles and offered directly to state boards would not only be conducive to the maintenance of a national standard of competency but would also promote mutual endorsement of licenses by state boards.

There are now 29 states and 2 territories which have enacted legislation for the licensing of physical therapists. Of this number, 15 have obtained their licensing test from the Professional Examination Service for a total of 700 candidates. As many of you probably know, the test contains 310 multiple-choice questions. It is divided into three parts: Part I covers the basic sciences and has 115 questions; Part II, the clinical sciences with 60 questions; Part III, physical therapy theory and procedures with 135 questions. The test is given in one day in three periods totaling seven hours.

A state board which is considering the use of this test requests a review copy from the Professional Examination Service and receives at the same time a manual of instructions describing the materials and services supplied by the Professional Examination Service and the procedures for ordering and administering the test. If the board decides to use the test it signs a contract with the Professional Examination Service which guarantees the board's right to certain services and which details the security measures that must be observed by the board to safeguard the confidential nature of the material. Examinations should be ordered about a month in advance of the examination date. After the examination is completed the answer sheets are returned to the offices of the Professional Examination Service for scoring. Candidates are identified by number only. The report of the scores of each candidate on each part of the test and on the whole test is returned to the board usually within a week of receipt of the answer sheets. Along with this report goes a summary of the data that have been accumulated on the test and a guide to the interpretation of the results. The Professional Examination Service does not set a passing mark but is glad to advise state boards on this matter if requested to do so. The Professional Examination Service is also fortunate in having the field consultation service of Charles B. Frasher who can visit the boards and discuss these procedures with them.

The American Physical Therapy Association underwrote the expense of preparing the test and thereby not only made the test possible but also made it possible to keep the fee charged the states for the use of the test at the low rate of $10.00 per candidate. Half of this fee is returned to the American Physical Therapy Association to build up a fund which is used for the analysis and improvement of the test.

Significant as was this financial support, it is of less importance than the active participation of your membership in the construction and maintenance of the test. This participation comes to the program in four ways: from the examination committee of the American Physical Therapy Association; from physical therapists who write questions; from those who review questions; and, never let it be forgotten, from candidates who take the test.

The members of the examination committee of the American Physical Therapy Association have devoted many hours of hard work to this testing program. I should like to tell you who they are. Members of the original committee were Eliza-

beth Addoms, Lucille Daniels, Mary Elizabeth Kolb, Florence Linduff, Dorothy Hewitt for the American Physical Therapy Association, and Barbara White for the Professional Examination Service. Sarah Rogers has replaced Dorothy Hewitt and Martha Wroe has replaced Mrs. Linduff.

The first committee was confronted with two major assignments, the decision as to the subject matter to be covered by the tests and the task of securing the necessary questions from physical therapists. The first assignment was met by a careful analysis of all state licensing laws to see what subjects were required by the state laws. The decision as to how extensively each subject should be covered in the test was made by the committee on the basis of its knowledge of physical therapy education and practice.

Some time before the American Physical Therapy Association and the Professional Examination Service began to work together on the testing program, the American Physical Therapy Association had collected over 1,000 questions from physical therapists. Since that time, the file has been increased by 1,500 questions which were also written by physical therapists who were supplied with instructions from the Professional Examination Service. The questions cover all subject-matter areas specified in the test outline. New questions are periodically obtained to freshen and strengthen the test. Over 200 physical therapists have helped in the writing and the review of these questions. The methods used by the Professional Examination Service to prepare the questions were described in the October, 1955, issue of the *Physical Therapy Review* by Dr. Elaine Grimm, then Assistant Director of the Professional Examination Service.

The multiple-choice question is familiar to all of you. It has numerous variations, but the basic form is an incomplete statement or question which the candidate completes or answers by selecting one of several choices that are presented to him. Criticism and defense of this type of examination question have been lively. Certain characteristics of the question form are particularly relevant to its use in evaluating professional people.

Of greatest significance is perhaps the fact that the response made to the question by the examinee can be scored, without equivocation on the part of the examiner, as either right or wrong. No judgment is necessary at the time of scoring. In fact, no judge is necessary. A scoring machine can, in the fraction of a second, indicate how many questions have been correctly answered. This feature of the multiple-choice question is at the same time its greatest asset and the focus of the most devastating criticism leveled against it. The mechanical scoring casts a shadow backward over the whole examining process. It dims the view of the creative effort that has gone into the preparation of the questions and it gives the impression that all of the important capacities of the candidate are being sacrificed to the limitations of an assortment of electrical connections.

There is nothing inherent in the scoring itself which justifies this condemnation. If this charge can be leveled against a multiple-choice test it is not the fault of the machine that did the scoring. It is the fault of the examiner who constructed the test. Objective testing shifts the responsibility of examiners from grading to preparing a test, but it does not diminish, in fact, it greatly increases the amount of effort and skill that the examiner must bring to the task of evaluation. The quality of an objective test can vary over a wide range and in the case of a test of professional competency, this range becomes very wide indeed. Professional people reach the highest levels of mental attainment. To evaluate these attainments is a problem of the most taxing sort. How can questions be written which will evoke in the examinee a response that reflects the quality of his professional knowledge, judgment, and maturity? The only way to accomplish this is to secure questions from practitioners of that profession and to apply to the process of test development the principles of psychometry.

The necessity for securing the participation of members of a profession in writing questions appears to be too obvious to justify comment but since it is a principle that is not always observed, it may be worthwhile to give some consideration to it here. It is obvious that members of a profession know what the important problems are and know what are its best available solutions. From the standpoint of test development, however, a significant thing that professional people know, and one which is not so obvious, is the weak or wrong solutions which are attempted. Persons untrained in a profession do not know what will sound plausible to the less competent of that profession. A multiple-choice question absolutely depends upon the ability of the four wrong choices to attract the incompetent candidates. Only you who have observed the wrong or the less desirable solutions attempted by yourself and by others in actual professional situations will know what to suggest for these incorrect choices. This is one of the most compelling reasons for the cooperation of physical therapists

with psychologists in test development. It is possible for a test technician to look up answers in a textbook, but the essential wrong choices must come from the experiences of practitioners themselves.

There are many aspects of question writing which might be discussed here, but there is just one more which should be mentioned at this time. A multiple-choice examination absolutely limits what a candidate can reveal about himself. If a test asks only questions about facts, a candidate can demonstrate only his factual knowledge. If he is to have an opportunity to reveal his capacity to use facts, the test must present him with problems requiring such use. Examiners who are evaluating professional people must not limit their examination to a determination of the candidate's factual knowledge. To obtain judgment questions, it is necessary to turn to the physical therapists themselves. Anyone can find the facts in a book, but to apply these facts to the daily practice of a profession requires experience in that profession. These questions are difficult for even experienced people to write, but we attempt to include as many as possible. Perhaps this explains why candidates whose schooling is some years behind them have no special difficulty with the test.

Before any question is used in the test, it is edited and reviewed by the staff of the Professional Examination Service and by a panel of three physical therapy reviewers, chosen because of their special competency in the field of the question. This can be quickly said, but it is in fact a time-consuming, painstaking operation. Before a question is seen by a candidate, it will have passed through the hands and minds of at least twelve other people. Very few questions emerge from this passage without changes designed to brighten, sharpen and clarify them.

Finally the committee, with the test outline before it, selects from the pool of approved questions those which will be used in the test. These decisions are based not only on a knowledge of the profession but also require a certain amount of artistry. A good test has style. Candidates may very well be unaware of this but it nevertheless affects their reactions to the test and possibly even their performance.

The test is at last ready for use, but it is not finished. It never will be. Every measuring instrument has some error and the great advantage of objective testing is that the error of the instrument can be measured and that this measurement reveals the way in which the test can be improved.

Two analyses have now been made of the questions in the licensing test and the test has been twice revised on the basis of the results. Each question in the test must add something significant to the examiner's knowledge of the candidate. The perfect question would, of course, divide candidates into the qualified and the unqualified. If someone were to write this question, licensing procedures would be greatly simplified. In the meantime we must try to pick out the questions which come closest to making this division of candidates, and eliminate defects in the questions which interfere with this discrimination.

To this end the committee inspects the responses made to every choice of every item. This inspection reveals how incorrect interpretations may arise because of faulty wording, or reveals unexpected truth in presumably wrong choices, or unexpected defects in the answer. This statistical pinpointing of flaws shows the way to correction, however, and the items can be revised to eliminate them.

As you might expect, it is easier to write questions in basic and clinical sciences than in practice and theory. Seventy-one per cent of the questions in the basic science test, Part I, needed no further revision when they were analyzed after having been administered to 177 candidates. Seventy-five per cent in Part II, the clinical sciences, met the standard of satisfactory performance. Only 52 per cent of the questions in Part III, physical therapy theory and practice, required no further revision. This does not mean that 48 per cent were poor questions. It means rather that 48 per cent required further improvement. Some were too easy, some were too hard, some were ambiguous. With each successive test revision, the percentage of satisfactory questions rises and the test becomes an increasingly sensitive instrument.

The difficulty level of all parts of the test is about equal. In each case about 70 per cent of the questions are answered correctly on the average. The passing mark, therefore, must be placed considerably lower than 70 per cent. Where this passing mark is set, however, is entirely up to the discretion of the individual boards. In point of fact, the vast majority of people who are admitted to a licensing test pass. A licensing test is, in this respect, quite different from a civil service test which has the purpose of picking out a few top performers. The task of a licensing test is to be sure that the few who emerge at the bottom of the list have found their right place, and that those who score above them deserve to

do so. That, in the last analysis, is the end toward which this whole effort is directed. On the accuracy of that division rests the professional fate of each individual examinee, the reputation of your profession, and the safety of your patients.

If we, as psychologists, are able to contribute to this accuracy, we shall be very happy indeed.

*Telling the Story in Your Community**

Edna M. Goldwater, B.A.

As members of a profession and a professional organization, you may wish to reach people in your community for several reasons. You may wish to inform the public about physical therapy and educational and professional standards to protect the health of the public. Or, you may have accepted the challenge and responsibility of attracting first-rate youngsters to the profession. If you want something from people you must approach them, deal with them, and accept the consequences of your actions. This is never simple. But in our professional as well as our personal lives it often becomes more complex than it need be. The trick is to keep an eye on where you're going.

There is no science in human relations, and there is no science in public relations. All you can do is consider what you would like to accomplish, figure out ways of doing it, and do it the best way you can. Then you hope for the best and are prepared for the worst. For people may not react exactly as you wish. And since it is people you are approaching, not machines or symbols which can be maneuvered for your own ends, it is well that this is so. If things do go wrong, and you honestly try to understand why, you may learn a good deal about yourself and other people in the process.

Sometimes this whole business of approaching people seems so difficult that we put it off and wait for a better time. This is a good way to avoid real or fancied unpleasantness. It is also a good way to miss out on opportunities for development, growth, and enrichment.

At the Association's Annual Conference in Detroit a physical therapist came up to me and said: "I am working in a new physical therapy department, and I find that no one in the community knows anything about physical therapy. They never heard of it. They are indifferent to it. How can I let them know we exist?"

She had taken a new job in a strange community shortly after she married and had been there almost a year. Her husband was a photographer, and he was eager to help. She also knew newspaper reporters and two men who developed programs for local radio and television stations.

I would be surprised if many of you number photographers, newspaper reporters, or television program directors among your friends or acquaintances. Nevertheless, all of you can either create or take advantage of opportunities to stimulate interest in physical therapy in your community.

I told my friend in Detroit that good photographs of physical therapists at work were rare and good photographers expensive. If her husband could take the time to look around at what goes on in a physical therapy department, noting what moved and interested him before he set up his camera, he would probably take the kind of pictures which would move and interest other people.

She could then take these pictures to the display manager of her local department store and ask his advice in setting up an exhibit. He might arrange for a display in his own store window. Or he might suggest ways for her to develop an exhibit to be displayed at a local bank or library.

A display is one way of reaching the people in your community. But a good display needs more than good photographs. It needs a point of view. Your pictures should tell a story.

What kind of story do physical therapists have to tell? How do you tell it? And why should you bother?

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* Presented at the AHA-APTA Institute for Physical Therapists, Boston, November, 1957.

Many of you have found yourselves in strange communities. How did you go about making a place for yourselves? Personally, that is, not professionally. My guess is, whether you planned your strategy consciously or not, that you made people aware of you. They saw you. They talked to you. They came to understand you, to know what could be expected of you.

In stimulating interest in your profession, your approach should be similar. You want to let people know who you are, where you are, what you do, how you do it, what your problems are, what you aspire to. This is the story you have to tell. You tell it again and again—but never twice the same way.

You talk about yourself socially at different times and in different places, and you seldom tell a story the same way twice. What you say usually depends on the people you're talking to and what you would like to get across to them.

It is always easier to talk to people when you are convinced you have something important to say and that people want to listen to you. All of you have important things to say, and the people in your communities need to hear them. They need to hear about you often, about your problems and your progress.

For we all share the same fears. We fear accident and disability, sickness and weakness. We are uneasy at the twinges of discomfort, the aches and pains that remind us we are mortal. And we need to know that the community is prepared to care for its weakest members. We are comforted that you are there, working at improving your skills, ready to help when you are needed. You are a symbol that people are important.

And if you can comfort people, can help them feel more at ease with themselves and the world in which they live, you are helping them do their best. You are also easing the burden on their relatives and friends, and, incidentally, you enhance your own prestige.

You will benefit in many other ways. More understanding of what physical therapists do and more appreciation for their efforts may be reflected in increased salaries, more physical therapy departments, more scholarships for physical therapy students.

If you can contribute to a greater understanding of the problems of your patients, a greater appreciation of their efforts, you will gain greater acceptance of them by their relatives, friends and employers, and add immeasurably to your own satisfactions.

You are also obliged to let the people in your community know about the services you offer. Many of your patients could not afford your services if they had to bear the cost unaided. Government subsidy, contributions from national organizations, and large-scale fund-raising drives are only some of the sources which make your services possible.

Suppose you are ready to tell your story. You realize it is important to tell it. How do you go about it?

One good way is to make the most of the opportunities that come your way daily, when you see people face to face. Your patients, for example. Or their families. A satisfied customer is still your best advertisement.

Then there are the people who visit your department. Some of you may be able to encourage local organizations to send people to visit your hospital and see what's going on in your department. Some of you may be able to arrange or participate in Open Houses. The Association has some "how-to-do-it" material on planning an Open House.

When it is not possible for people to see you at work personally, you can show pictures of what you do. But at this point you must begin to be selective. When some one visits you, he is assailed by a host of impressions, and he selects the details which become memorable to him. When you leave your own setting and try to describe or interpret it, you defeat your purpose if you try to say too much. You must decide what you would like to emphasize, then choose words, pictures or materials which will help you make your point.

If the physical therapist I met in Detroit did not have such an accommodating husband, she might still arrange to have good photographs taken without hiring a photographer. She could call a local newspaper and discuss the possibility of an interesting story in her physical therapy department, and she could suggest subjects for good photographs. Some of her friends are in the newspaper business, and she could try out some of her ideas on them. But if she had never met any one remotely connected with a newspaper, she could still call and introduce herself and tell her story with a fair chance of success.

A couple of months ago the Metro News Group and King Features Syndicate released picture stories on physical therapy to rotogravure sections of Sunday papers throughout the country. The photographs are excellent, and I believe the efforts of the chief physical therapist at St. Vincent's Hospital, where the photographs were

taken, is an important factor in their success. She knew her patients, her staff, her equipment, and her facilities better than the photographer. Every day she sees situations which interest, delight, and move her. She was working with an experienced photographer, but he appreciated her suggestions nevertheless.

You may be interested to learn that both syndicates used identical pictures. The emphasis of one picture story was on recruitment. The other was designed to portray what physical therapists do.

In addition to appealing to a general audience you will also want to concentrate on special groups in your community. For recruitment purposes high school students are good prospects. Those who have indicated an interest in medical careers are better prospects. Speeches, film and film strip showings, invitations to open houses, invitations to make a tour of inspection and to talk to a particular physical therapist are all good ways to make a good prospect a better prospect. Here, again, you will try to arrange to see these people face to face as often as possible. Where you cannot see them, try to enable them to visualize what you would like them to see.

Those of you who are interested in photography or have access to the services of a photographer might be interested in a project I suggested to recruitment chairmen in September. Pictures may be taken on a particular theme, put into albums, and offered to local libraries. We suggested one on the life of a physical therapy student, showing her entering her first class, her first visit to the anatomy laboratory, her first social event, her first clinical experience, following her through school to graduation.

The treatment of one patient might be the subject of another album, following him from his first visit to the hospital through the various stages of treatment until his discharge.

These photographs can also be displayed as you go along. You might arrange for permanent exhibit space in your hospital.

The Association has an excellent film strip in color about physical therapy which would simplify the task of any speaker. It is also accompanied by a teaching guide which may be edited to fit your circumstances.

Many story ideas do not lend themselves to the use of pictures. And whether or not you believe you have a dramatic sense, you can all suggest many ideas for newspaper stories, which may not occur to newspapermen.

How people are injured is news. But you should let people know about the care you give after injury. What happens to patients after injury, and what do they endure before taking up their lives again?

Fires are news. If some one in your community is burned or injured in a fire, the chances are you will all read about it. If several people are injured, their story will rate more space and more attention.

You care for people who are severely burned. How many people in your community or any other know this? Newspaper stories about your patients are written before treatment is begun. I believe people would be interested in reading about your contribution in restoring these patients to life in the community.

It is especially touching to see a child in a prosthesis. You can probably interest a newspaper in a child in your care and ask them to see him at various stages during the course of his treatment.

You all have reason to be proud of the care you have given patients who came to you severely disabled and whom you helped restore to life. Many of you develop lasting friendships with patients. They believe you can understand their hardships and appreciate their efforts like no one else—not their wives, husbands or mothers—and you can.

You need not reveal any professional confidences in calling a story to the attention of a newspaper. Many patients will be willing to have their stories told. You are witnesses and participants in human drama. You have more opportunities to observe the human condition at close range. You see depths of discouragement and peaks of courage, tremendous effort and little gain, great potential and little effort. You learn about the kinds of lives people really live and the circumstances which defeat them or over which they triumph. These are all stories, stories which will interest the people who read newspapers and magazines, listen to the radio, look at television programs and motion pictures.

In channeling information of this kind to the public, you will help people come closer to their own humanity. In giving them a greater understanding and appreciation of your efforts and those of your patients, you will help them establish balance in their own lives.

Dr. Gardner Murphy, Director of Research at the Menninger Foundation, says in his article on Professional Growth and Personal Fulfillment: "We say 'We didn't think he had it in him,' and if we are still capable of growth, we may also find that there is something in ourselves we

didn't know was there. I am referring not only to those challenging cases of unexplained recovery from disease in which the patient's personality, as well as the nurse's personality, undoubtedly make a decisive contribution. I am referring also to those less dramatic but enormously important daily experiences in which the response between two personalities, the patient's and that of the person who cares for him, give the occasion for a new understanding of life."

You have the opportunity to see how delicate life really is, the kind and amount of nourishment it needs. And you know that even in difficult times, it can be fed so that it grows stronger. If you can convey this to other people, you will contribute to their development and their satisfaction with their own lives.

In dealing with newspaper reporters, editors, and people employed in radio and television, it is important that you understand something about their operations and try to adapt to them. It is important to know, for example, that reporters, editors, and producers must meet deadlines. They cannot always take the time to check on facts. But if they do try to reach you, make every effort to be available. If you try to keep your lines of communication open the year 'round, welcome their interest, and tell them as much as you can, your relations will proceed smoothly.

It is not unlikely that on occasion a question will be asked which makes you uncomfortable. If you explain your point of view, you will usually get cooperation and understanding. At any rate, this makes for better relations than avoiding the matter altogether.

Reporters want facts. The facts are what you do, how you do it, to whom you do it, where and when it is done, and what happens as a result of what you do.

If a newspaper reporter were interested in doing a story about you, personally, how would you feel about it? The chances are you would be more uneasy than pleased about being selected. After all, you work with other therapists, doctors, and nurses who work as hard as you do, and they all contribute to the success of treatment, so why should the spotlight fall on you? If you consider that you are being used to symbolize the efforts of those other people you admire, you may be able to cooperate more readily. Some one person will always be chosen. If you are that person and are asked to take time out from your job to work in another area, you will be doing your job for the day by cooperating as well as you can.

We talked about photographs, displays, albums, speeches, open houses, and news stories. Many of you may also want to venture into radio and television.

In May, I wrote 21 spot announcements for use on radio and television and sent them to recruitment chairmen with suggestions on placing them with local stations. Ten were one-minute spots inviting inquiry about summer jobs. Seven were one-half minute spots to be announced on Memorial Day. Five were spots suggested for weather breaks.

A recruitment chairman in a suburb of Philadelphia adapted 10 spots for radio, 3 to be used on Memorial Day. A physical therapist tied to the house and children agreed to reply to telephone inquiries. In some cases a box number was announced. A total of 47 people asked for additional information; 12 telephoned; 35 wrote. The recruitment chairman wrote to ask me if I thought this was a good response. The physical therapy school at the University of Pennsylvania has a total of 36 students this year, the largest number they have had so far.

This recruitment chairman had never placed material on radio before. She is now eager to tackle television. All she did was to call the program director, tell him she had some announcements she'd like to show him, and make an appointment to see him. The material she showed him was designed to fit his requirements.

If you, like the physical therapist I met in Detroit, know several program directors in your community, one part of your job will be easier. You know they will see you and talk to you. But if the material you suggest is not suited to their needs, they will not be able to use it.

For the past few days you have entered this room regarding yourselves as professional people with a particular skill in physical therapy. You have been reminded how a hospital is organized and managed, how a physical therapy department comes into being, how staff is trained, how records are kept, how you can call on the resources of the community to help you work more effectively with your patients.

Let me remind you that you are also complicated human beings, with abilities and limitations, trying to make the best of your circumstances, to lead a balanced life, to do the best possible job, to prepare for your future, to have as much fun along the way as you can.

You develop in relationship to other people. You want to feel comfortable with them, and you want them to feel comfortable with you, and you would like to achieve this happy state as often

as possible. Much of the time you probably wonder how other people are coping with problems similar to yours.

All of this is also true of every one you meet. If you keep this in mind you will not have to look very far for the story you want to tell to the people in your community. You will also not be discouraged if the seeds you implant do not bear fruit immediately. You know the painstaking effort and the patience it requires to modify an old habit and develop a new attitude. But if you persevere, you will make yourselves seen, heard, and known. When the people in your community know you, they will respect your abilities, sympathize with your difficulties, and do what they can to cooperate with you.

Case Reports

Left Above-the-Knee Amputation and Right Hemiplegia

Harold G. Smith, B.S., and
E. R. Lerwick, M.D.

The patient, a 57 year old male, came to the department of physical therapy for rehabilitation following a left A.K. (above-the-knee amputation). The situation was complicated by the fact that, four years previously, the patient had suffered a cerebral vascular accident, leaving him with a residual paresis of the right extremities. The patient could perform limited active motion of the shoulder and the elbow, but had no functional use of the right upper extremity which was maintained in the typical hemiplegic position. All muscle groups of the lower extremity were graded "fair" or below "fair." The hip flexors and gluteals were weak (F- to F); there was no functional use of the right ankle. It had been necessary for the patient to use a cane for the past four years.

The patient had been admitted to the hospital for minor plastic surgery to his nose, but while in the hospital it was discovered that he had a symptomatic abdominal aortic aneurysm and the left femoral pulse was barely detectable. An aortic resection and homograft were performed. When the aneurysm was resected it was discovered that the left common iliac artery was nearly occluded by the aneurysm and there was a thrombosis of the common iliac, external iliac, and the proximal common femoral arteries. This thrombus was removed by endoarterectomy and the left limb of the graft was anastomosed to the common femoral artery. Following surgery the left lower extremity appeared to have good blood supply. On the first postoperative day it was discovered that there was no tibial pulse and the leg was cold below the knee. The following day the patient underwent a thromboendoarterectomy of the superficial femoral artery and the popliteal artery of the left lower extremity. Postoperatively there was no improvement in the condition of the leg and on the ninth day a midthigh amputation of the left lower extremity was performed.

Prior to performing the amputation the physician had conferred with the physical therapy staff regarding the postoperative care and plans for referral for rehabilitation. As soon as the patient was returned to his room following surgery, the private duty nurses were instructed in proper bed positioning of the stump. The wound healed well and one week later the patient was referred for physical therapy, with an ultimate goal of ambulation with a prosthesis. The program was initiated on the ward with active exercises to the stump. The following day the patient received exercises and electrical stimulation in an effort to improve the motion and the strength of the paralyzed right extremities. These procedures were continued daily for a period of three weeks.

Three weeks after surgery a plaster pylon was constructed in the physical therapy department and the patient stood for the first time since the amputation. The prospect of ambulation was conconsidered and within a week it was decided that the patient would be able to use a prosthesis. One month after the amputation, a regular willow wood prosthesis was ordered, but with the addition of an automatic (Bock) knee. This was necessary to give the patient increased stability due to the weakened condition and poor function of the right lower extremity.

For the following four weeks the patient came to physical therapy twice a day for gait training in the parallel bars and exercises to the stump and the right extremities. For the first two of the four weeks the patient was given pre-ambulation training consisting of: balancing, weight shift, moving the pylon forward and backward, moving the right leg forward and backward, placement of the pylon, and side steps. During the last two weeks the patient walked in the parallel bars, practiced stair climbing, and walked in the hallway . . . with assistance. Throughout the four weeks the patient

Harold G. Smith, Assistant Chief Physical Therapist; E. R. Lerwick, M.D., Chief of Staff; Missouri Baptist Hospital, St. Louis.

was given progressive resistive exercises to the right lower extremity in an effort to increase the muscle power of the quadriceps, the hamstrings, and the gluteal muscles. During this time the physical therapist wrapped the stump and used electrical stimulation and massage to assist in the conditioning of the stump.

Two months after the original surgery the patient received his prosthesis. From this time on the program was directed toward ambulation, both in the parallel bars and in the hallway. With a cane and with the protection of a therapist on his right side, the patient was able to ambulate almost immediately; but the problem was to instill enough confidence in the patient so that he would be able to walk by himself.

Three months after the amputation the patient was discharged from the hospital and reported to the physical therapy department as an outpatient three times a week for exercises and gait training. During this time the emphasis was on instilling confidence in the patient and attempting to motivate him to be self reliant. When last seen, the patient was walking approximately 300 yards by himself. He was able to get into and out of a chair, go up and down stairs, and get into and out of an automobile.

DISCUSSION

As a reminder to the members of the profession that each new requisition for treatment must be evaluated on its own merits and not according to preconceived criteria, this report is presented. When this patient was referred to the Physical Therapy Department of Missouri Baptist Hospital, the first reaction was that the patient would never walk; but after consultation with the attending physician and a thorough evaluation of the patient's past history it was agreed that he would be a good candidate for physical therapy.

Although it is admitted that this patient does not have as perfect a gait as an amputee might who does not have the added handicap of hemiplegia, it is important to note that the patient is self reliant to the extent that he is able to walk around his house and to take care of his personal needs, with the exception of applying the prosthesis.

If the original attitude had prevailed, this patient would have spent the remainder of his life in either a wheel chair or as a bed patient; because the attending physician and the physical therapist refused to allow a "first reaction" to discourage and bias them, this patient is now walking and is taking an active part in his environment. Even if the first cursory examination of a patient indicates that he is not a good candidate for rehabilitation, this should not be sufficient reason to discourage the initiation of a rehabilitation program. For the benefit of those patients who do not fit into prearranged categories it is essential that physical therapists do not allow themselves to assume a defeatist attitude. Rather they must base all attitudes on sound evaluations of the patient's psychological and physical potentialities.

Proprioceptive Neuromuscular Facilitation Film

A 35 minute color film with sound is available to chapters and schools of physical therapy at a rental fee of $10.00. One copy of the film has been given to the Association by the California Rehabilitation Center. Requests from states east of the Mississippi should be directed to the American Physical Therapy Association, 1790 Broadway, New York 19, New York; rental is payable to the American Physical Therapy Association. Those west of the Mississippi should write to California Rehabilitation Center, 2600 Alameda, Vallejo, California; rental is payable to the California Rehabilitation Center. All requests should be submitted two weeks in advance of date of showing. Alternate dates are desirable since both copies may have prior bookings.

Suggestions from the Field

A Mattress Designed for the Convalescent Care of Hip Socket Arthroplasties

Vera R. Ford, M.A.

In hip socket arthroplasties there have been inadequate means in meeting two critical needs for convalescent patient care: 1) careful body positioning in bed to prevent hip flexion and external hip rotation contractures, 2) a method of regaining hip abductor and hip extensor muscle strength.

To meet these needs a special mattress was designed with the help of the Nursing Service and submitted for reconstruction to a mattress company. A regulation size hospital mattress was sectioned across the width at a line 3 feet 7 inches from the top. The lower half was divided lengthwise into equal parts. (Fig. 1)

A patient who had had an arthroplasty of the right hip was placed on the bed with buttocks resting just above the division line of the mattress. A Chick Hip Exerciser was rigged to support the right lower extremity. The lower section of the mattress was removed. The sling was then adjusted to position the right lower extremity in a relatively straight line with the body, thus discouraging the hip flexion contractures.

In this position and by using this equipment the patient was able to perform hip abduction (Fig. 2), extension, and internal rotation necessary to strengthen the weakened muscle groups and to prevent adaptive shortening of other muscle groups.

Assistant Director of Physical Therapy, Orthopaedic Hospital, Los Angeles.

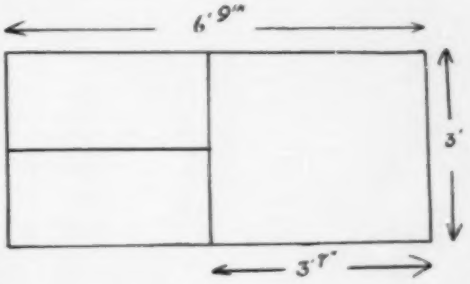

Figure 1.

Figure 2.

AHA-APTA Institute for Physical Therapists

Applications are being received at the American Hospital Association's headquarters in Chicago for attendance at the Institute in Kansas City on Nov. 10-14, 1958.

Have you sent in your application?

Editorial

Licensure Examination

Examinations for licensure of a professional group within the states and territories for the protection of the public provide one of the means to assess fitness to practice within the respective jurisdictions. This issue of the *Review*, beginning on page 679, reports the experience of your Association with the Professional Examination Service of the American Public Health Association as given to the 1958 House of Delegates. Because your Association recognized the need for uniformity and equivalent levels of licensure examinations, the P.E.S. Licensure Examination for Physical Therapists became a reality and is proving its usefulness. Development of a second examination for the purpose of determining competency of foreign-trained physical therapists and qualifying them for Association membership has proceeded concurrently.

Dr. Long has stated that $5.00 of the $10.00 fee charged for each examination is returned to the Association. Since 1953 the total amount invested by our Association to provide a fair and uniform licensure examination and a qualifying examination for the foreign-trained has exceeded $12,000.00; approximately one half of this amount was expended for the licensure examination. To date (Aug. 1, 1958) the total income realized by the Association has been slightly more than $4,500 of which all but $475.00 has been returned on licensure examinations. Therefore, the total remaining net cost to the Association is more than $7,000.00. This entire project is an ongoing one. Because of necessary recurrent revisions of the examinations it is not anticipated that income to the Association will ever exceed the cost. The expenditure of Association funds for this purpose is justified on the bases of protection of patients, assurance to physicians and employers of physical therapists' fitness to practice, and as a service to members of our profession in that fair and uniform examinations are provided.

Because certain members have felt reluctance to take a licensing examination and because certain examining committees and boards have felt reluctance to require a written examination, we have made an effort to determine the percentage of failures occurring in one year. Recent graduates and others having many years of experience have taken the examination. Reports received from seven states where a

Editorial

total of 190 candidates were examined by the P.E.S. licensing test reveal that only 10 candidates failed. The 10 failures occurred in 6 states; the rate of failure was 5.2 per cent.

This 5.2 per cent rate of failure may seem low. For purposes of comparison we reviewed the 1957 rate of failure experienced by physicians admitted to the National Board Examinations provided by the National Board of Medical Examiners. Parts I and II of that examination are of the multiple-choice type and cover the basic sciences and clinical subjects; the type of examination and content are comparable to the P.E.S. Licensure Examination for Physical Therapists. Obviously, the content of both examinations cannot be identical because the professional levels are not the same. It is interesting to note that the 1957 rate of failure for physicians was 8.9 per cent on Part I, and 0.8 per cent on Part II. Thus the rate of failure that has been experienced by physical therapists compares favorably with the rate of National Board candidates.

All members of our Association are interested in the welfare of the patient and the maintenance of standards of performance. They should read Dr. Long's article with the realization that the Association's legislative program includes the goals of uniformity in licensing tests, establishment of equivalent levels in licensing examinations, improvement in the quality of examinations and interstate endorsement of credentials which promotes ease of movement from one state to another. These goals are the objectives regarding licensing examinations in medical licensure as well and we as a professional group, though not autonomous, must have correlative standards.

DOROTHY E. VOSS
Editor-in-Chief

Northwest Medicine Notes Seattle Conference

Physical Therapists Meet *

Third phase of medical care was given emphasis in this region last month when the American Physical Therapy Association held its thirty-fifth annual session in Seattle. It was the first Northwest visit of this long established and active organization. Emphasis was on better understanding of the patient and better methods of carrying out the therapy prescription of the physician.

As pointed out by Howard Rusk, medical care is not complete with diagnosis and treatment but must be carried through the third phase, rehabilitation, until the patient has regained maximum usefulness to himself and society. It is for this that activities of the American Physical Therapy Association should be of interest to physicians.

The six day conference was attended by more than 800 physical therapists from all parts of the nation. The list of speakers included many physicians. Subjects ranged from reports of recent fundamental research to communication problems in teaching, to practical demonstrations of new therapeutic techniques.

(The topics of the Conference Program and names of lecturers were enumerated.)....

Actually, a meeting of physical therapists, such as the one held in Seattle in June, is more than just an event of interest to physicians. It is a challenge. Physical therapists are not only willing but anxious to render their service com-

* Reprinted with permission from *Northwest Medicine*, Vol. 57, No. 7, July 1958.

pletely in accord with the directions of physicians. Most physicians in practice see some patients who could benefit from physical therapy. Need for knowledge of how best to use it is the challenge.

The Physical Therapy Fund

Requests for a grant from the Physical Therapy Fund should be received before the first of December in order to be considered this next year.

In making a request for a grant the following data should be supplied:

1. Description of project for which grant is requested.
2. Estimated amount of money needed.
3. Estimated time to complete the project.
4. State how project will advance the science of physical therapy.

Be sure the name and address of the applicant is included. Applications should be addressed to the Physical Therapy Fund, Inc., 1790 Broadway, New York 19, New York.

The Directors will also welcome any suggestion considered as an appropriate purpose for the fund to undertake.

Marriages

Janice Arneman, of Pittsburgh, Pa., now Mrs. Janice A. Cooper, Cincinnati, Ohio

Faye Arnold, of Indianapolis, Ind., to Robert Buckley, Indianapolis.

Diana L. Baker, of Atherton, Calif., to Robert D. Freisem, Monterey, Calif.

Brenda A. Bellavigna, of Hasbrouck Heights, N.J., to Lyle Lampkin, Indio, Calif.

Gertrude Brandstadt, of Avon, Ohio, to K. N. Sutton, Elyria, Ohio.

Florence C. Cunningham, of Birmingham, Ala., to Walter W. Wood, Birmingham.

Mary Deaver, of Kansas City, Mo., now Mrs. Mary D. Slater, Kansas City.

Dorothy J. Deeley, of Danbury, Conn., now Mrs. Dorothy D. Gill, Bethel, Conn.

Barbara L. DeLaney, of Omaha, Neb., to Raymond Q. Brown, Colorado Springs, Colo.

Lucille Diaz-Lopez, of Hato Rey, P.R., to Ramon A. Diversé-Ufret, Rio Piedras, P.R.

Beverly Dickinson, of Detroit, Michigan, now Mrs. Beverly D. McUmber, Detroit.

Jacqueline A. Drouin, of West Haverstraw, N.Y. to Charles J. Craig, Elmhurst, N.Y.

Doris Fallquist, of San Francisco, Calif., now Mrs. Doris F. Gospe, San Francisco.

Myrtle E. C. Ford, of Camp Pendleton, Calif., now Mrs. Myrtle F. Fee, Honolulu, T.H.

Ethel F. Garcia, of Denver, Colo., to William Delouche, Denver.

Ellen A. Grant, of Silver Spring, Md., to Paul F. Watlay, Rockville, Mo.

Rosemary Hines, of Brighton, Mass., to Jerome J. Green, Cambridge, Mass.

Elizabeth D. Jackson, of Richmond, Va., now Mrs. Elizabeth J. Porter, Richmond.

Arlene M. Knouse, of Altoona, Pa., now Mrs. Arlene K. Piper, Altoona.

Betty G. Koplovitz, of New York, N.Y., to Charles E. Cohee, New York.

Myrna Levine, of Needham, Mass., now Mrs. Myrna L. Godfrey, Needham.

Mary H. Mickens, of Houston, Tex., now Mrs. Mary M. Brown, Houston.

Helga B. Rookard, of Berkeley, Calif., to G. Geraldson, Berkeley.

Patricia Short, of Talent, Ore., now Mrs. Patricia S. Thorniley, Talent.

Marjorie Talkington, of Denver, Colo., now Mrs. Marjorie T. Armitage, Denver.

Dennis G. Webb, of Memphis, Tenn., to George Frasier, Searcy, Ark.

Ann E. Wolcott, of Long Beach, Calif., now Mrs. Ann W. Wheat, Long Beach.

Chapter News

Iowa

The July newsletter informed all Chapter members of important plans for the coming year and carried a complete report of 1958 House of Delegates sessions in Seattle.

Michigan

Chapter members assisted with planning a program of interest to physical therapists and members of other medical groups given at the September meeting sponsored by the Office of Vocational Rehabilitation, Jackson, Michigan.

Washington State

Chapter officers, Chairmen of Committees and Chapter representatives to local organizations reported to the members in the 8-page June newsletter. Washington State Chapter has a representative to the Washington State Hospital Association, the Washington State Health Council, and the Washington Council on Statewide Legislation.

Wisconsin

Anatomy Day, held in Madison in May, included review of anatomy of the shoulder girdle; measurement of shoulder girdle movement; demonstrations of dissections of the brachial plexus, upper extremity, and other parts; and presentation of two films on related subjects.

Association News

Elections—1959

Directors and Nominating Committee

Under the revised structure of the Association, annual elections are necessary. The Nominating Committee urges that immediate attention be given to suggesting possible candidates to fill the following vacancies which will occur in June 1959.

Three directors to serve terms of three years (These are to replace Louise Bailey, Jane Carlin, and Florence Linduff who were elected in 1958 to serve terms of one year.)

Two members of the Nominating Committee to serve terms of three years (These are to replace Mary Clyde Singleton and Dorothy Wagner who were elected in 1958 to serve terms of one year.)

The Nominating Committee will recommend a slate of officers from the candidates suggested by the membership, but the membership must first make its recommendations. Chapters have been asked to offer suggestions for nominees. Individual members may also send to the National Office by Nov. 1, 1958, the names of any members they feel are qualified to serve for specific positions.

Executive Director Appointed

The Board of Directors has announced the appointment of Annetta Cornell Wood to the position of Executive Director effective Sept. 15, 1958. The Board reached its decision following review of 24 résumés of candidates referred by five agencies specializing in executive positions. A Selection Committee composed of Jane Carlin, Florence Linduff, and Helen Vaughn acted for the Board in reviewing résumés and by interviewing nine selected candidates. All candidates had previously been oriented on affairs of the Association by Mary E. Haskell, who leaves the position after ten years of service with the Association. Of these nine candidates, Mrs. Wood was deemed the best qualified for the position by the Selection Committee, the Board of Directors, and the Consultant Staff of the National Office.

Mrs. Wood brings to the Association experience acquired over a period of 15 years in working in the fields of public relations, promotion, programing and fund-raising on behalf of several companies and organizations. Public relations and fund-raising were Mrs. Wood's major responsibilities in her most recent position with United Neighborhood Houses of New York. Her

previous positions include that of Director, Women's Division, National Fund for Medical Education, where Mrs. Wood assisted in raising funds toward support of 82 American medical colleges.

For two years Mrs. Wood was Program Analyst on the senior staff level of the National Federation of Business and Professional Women's Clubs serving this organization by research, writing, and programing in the areas of health and safety, public affairs, national security, and program coordination. She also provided staff assistance and guidance to national officers at conferences and conventions as well as contributing articles and editorial assistance to the Federation's magazine, *Independent Woman*. Full-time positions in public relations with the New Jersey Bell Telephone Company and later with the Northeastern Life Insurance Company of New York were held by Mrs. Wood during the period 1941-1954.

Mrs. Wood graduated Cum Laude with honors in English and Phi Beta Kappa from Ohio State University. She has had additional study in business administration, journalism, public relations, advertising, public speaking, life insurance, and adult education.

At the premiere of the Association's new film, *The Return*, Mrs. Wood was first introduced as Executive Director by Mary E. Haskell to more

than 200 persons interested in physical therapy including many members of the Association. Other members will have an opportunity to meet and know Mrs. Wood when they visit the National Office, attend Annual Conference, or when Mrs. Wood represents the Association at other meetings throughout the country.

Recipients of APTA-OVR Traineeships

The American Physical Therapy Association is pleased to announce the first awards of APTA-OVR Traineeships to eight of its members:

Millard L. Berman, Miami, Florida	University of Miami
Joseph J. Defibaugh, Hayward, California	Stanford University
Norma J. Ewan, Edmonds, Washington	Stanford University
Roy A. Gilchrist Durham, N. Carolina	University of North Carolina
Ann H. Marshall, New York, New York	University of Colorado
Mary C. Singleton Durham, N. Carolina	Duke University
Shirley Stockmeyer, Upper Nyack, New York	Stanford University
Norman Taslitz, Madison, Wisconsin	Stanford University

Each of the above will enter the graduate school of choice in September 1958. The projected programs of study are developed around two major fields, anatomy and physical therapy; the selection of classes is more diverse—for example, biophysics, physiology, statistics, educational testing and evaluation, audio-visual aids, foreign languages and scientific writing in addition to offerings by the departments of anatomy and physical therapy.

The recipients have indicated varied plans for work in physical therapy following the period of study including clinical supervision of physical therapy students, teaching, participation in clinical research, supervision and administration in departments of physical therapy. To such positions they will bring the benefits and experiences of a year of graduate study.

Members' Publications

Signe Brunnstrom is co-author with G. Reynolds and N. Thompson of Preliminary Report on Neuromuscular Function Testing of the Upper Extremity in Adult Hemiplegic Patients, *Archives of Physical Medicine and Rehabilitation*, May 1958.

Anthony J. De Rosa is co-author with Edward J. Lorenze and Elvera L. Keenan of Ambulation Problems in Hemiplegia published in the *Archives of Physical Medicine*, June 1958.

Alma J. Murphy is co-author with G. H. Koepke, E. M. Smith, and D. Dickinson of Sequence of Action of the Diaphragm and Intercostal Muscle During Respiration published in the July, 1958 issue of the *Archives of Physical Medicine*.

Appointments In Universities

Three physical therapists have received appointments in three universities and will serve as directors of the curricula in physical therapy: Barbara White at the University of Florida, Gainesville; George Brunner at the University of Washington, Seattle; and Frances Ekstam, Acting Director, Indiana University, Indianapolis.

Junior students are being admitted in September 1958 at Indiana and Washington; and will be admitted to the Junior year at Florida in September 1959.

Miriam E. Best of Wheaton, Illinois, passed away on July 14, 1958 following a long illness. Miss Best, a graduate of Wheaton College, received the certificate in physical therapy from Northwestern University in 1950. Prior to her physical therapy career Miss Best had been an instructor in physical education and had served with the WAVES, USNR, from 1943 to 1945. Miss Best's physical therapy career of seven years' duration was centered at Passavant Memorial Hospital, Chicago, where she was director of the physical therapy department until illness forced her to retire from work. Miss Best had been an active member of the Association and the Illinois Chapter since September 1950.

Mrs. Sarah Utter Colby of Los Angeles, California, passed away suddenly on Aug. 8, 1958, in Olympia, Washington, while vacationing with friends. Mrs. Colby, a graduate of Northfield Seminary, Northfield, Massachusetts, and the University of Southern California (class of 1904), received her physical therapy training at the New Haven Normal School of Gymnastics in 1906-1907. After several years of work in remedial gymnastics, Mrs. Colby served as a Reconstruction Aide with the A.E.F. in France during World War I. After the war she held responsible positions in the public schools in Southern California and for a number of years, beginning in 1928, Mrs. Colby worked with orthopedic physicians in the Los Angeles area.

Mrs. Colby was a Charter Member of the Association in 1921 and served her profession and the Association as president of her local chapter and as president of the Association, 1934-1936. A Life Member since 1948, Mrs. Colby continued her interest in Association

affairs and was Southern California Chapter's Business Manager of the 31st Annual Conference in 1954. Typical of Mrs. Colby's interest in the future of her profession was her request in 1951 that her subscription to the *Review* be transferred "to some worthy student . . . who can use it to better advantage," and her comment that "It has been thrilling to watch the Association grow and to be a part of it all these years."

Director of Bouvé-Boston School

Ruth Page Sweet, director of Bouvé-Boston School, which is affiliated with Tufts University, died August 22 in the New England Baptist Hospital, Boston. She made her home on Glezen Lane, Wayland, and had a summer home at Makoniky, Martha's Vineyard. Her brother, Clifford B. Sweet, of Northboro, and two nieces and a nephew survive.

Miss Sweet was born in Worcester, Mass., on Apr. 20, 1894, was educated in Worcester schools and graduated from South High School in 1912. She attended Mt. Holyoke College and later entered Boston School of Physical Education, graduating in 1919. She earned degrees of Bachelor of Science in Education and Master of Education at Boston University and in addition studied at the Harvard Graduate School of Education. In June of this year, Miss Sweet was awarded an honorary Doctor of Education degree by Tufts University.

Miss Sweet's professional career included positions as director of the department of health and physical education at Y.W.C.A.'s in Rochester, N.Y., Worcester, and Boston prior to joining the staff of Bouvé-Boston School as dean in 1929. During these years, she held summer positions as head of water sports and head counselor at Camp Wyonegonic, Camp Kineowatha, and Camp Winnecunnet. From 1946 to the present she was director of Bouvé-Boston School and was responsible for some of the most important developments in its history. Chief among these were the moving of the entire school in 1950 to the campus of Tufts University in Medford, Massachusetts. Under her direction the planning and construction of the school's administrative and class room building and of the new dormitory were carried to completion. The new residence for 160 women was named Ruth Page Sweet Hall in her honor.

In addition to her achievements in her professional positions, Miss Sweet was a member of committees of the National Board of the Y.W.C.A., the American and New England Camping Associations, National Education Association, American and Massachusetts Associations of Health, Physical Education and Recreation, and the National and New England Associations of Deans of Women. In her community she served as a leader of Campfire Girls and Girl Scouts, and was captain of the Wayland Civil Defense Motor Corps. She was a member and lecturer at the Women's Educational and Industrial Union and a member of the Boston City Club.

Western Electric Aids Recruitment

In Quest of Health, one of a series on The Road to Health, introduced Western Electric employees and members of their families to physical therapy recently when 120,000 copies of the pamphlet were distributed.

The leaflet was prepared by John H. Mahan, science writer, in cooperation with the American Physical Therapy Association and the Hospital for Special Surgery, New York City. The various forms of physical therapy including therapeutic exercise, hydrotherapy, heat, ultrasound, and ultraviolet light are briefly described and illustrated. Bearing the insignia of the Association, the objectives of physical therapy, the training, duties and opportunities for physical therapists are stated.

In Quest of Health, therefore, serves the Western Electric Company in education of its employees as to the meaning of physical therapy and the necessary qualifications of physical therapists, as well as serving our profession by aiding recruitment efforts.

Alaska Chapter Reports

Greeting to members of the APTA!

How often the Alaska Chapter receives letters from people who are just interested in Alaska and the things we do here, so we thought, "why not write a brief newsletter of the P.T.'s in Alaska and include, in general, some of the interesting facts of the Territory itself."

Alaska is twice as large as the State of Texas. It covers some 586,000 square miles with a coast line that is longer than that of the Continental United States. The smallest distance separating North America from Asia occurs between the American Little Diamede and the Russian Big Diamede. The distance being just 3 miles between the two islands.

The small drawing done to scale showing Alaska superimposed on the United States gives you an idea of the size and vast expanse of the territory as related to more familiar distance in the U.S.A. The terrain is rugged and mountainous, with glaciers lying like giant fingers throughout many of the mountain ranges. Mt. McKinley is the highest peak in North America rising 20,300 feet above the sea. Although it is 200 miles from Anchorage, on a clear day its giant white peak is clearly visible. The Malaspina glacier is one of the largest in Alaska and is larger in area than the State of Rhode Island. Some lie near the highway, and one can walk up to them by going a short distance off the highway. But just as there are high mountains, so are there the valleys streiching out between the mountain ranges and offering a more gentle course for the many mighty rivers that flow through Alaska. Lying as it does between 54 and 75 degrees longitudes and between 132 and 174 degrees parallel, both on open sea coast and with a vast interior locked in mountain ranges, one can and does find a great variance in the climate and types of vegitation growing in different areas. The southeastern panhandle is mild because of the Japanese Current nearby. The rainfall here is perhaps one of the greatest in the world, and is measured in feet instead of inches—not uncommonly reaching 12-14 feet a year. Here we find luxurious forest growth of giant spruce and cedar; however, just as different is the Aleutian Chain which is cold, windy and damp, and where there are no trees. Or the interior when 50 degrees below in winter is not unusual and the hours of the day light may number three or four, or farther north where day light may be only an hour of twilight in winter and in summer, even at midnight there, not really dark. This is the north coast where they still catch polar bear, whale, and walrus.

Relative size of Alaska and the U. S. A.

The wild life in Alaska is abundant and much of it is of the trophy variety. The Alaska moose is the largest of its kind on earth, the bulls attaining a weight of more than 1,400 pounds. The Kodiak brown bear is the largest carnivorous animal to be found in the world today. There are also buffalo, goat, Dahl sheep, caribou, reindeer —and in southeastern Alaska—the Sitka deer. If a family is fortunate enough to have a good hunter it is quite possible they need never buy domestic meat. There are also the trapping animals such as mink, martin, ermine, beaver, muskrat, land otter, and lynx.

The present population of Alaska is 222,100, approximately one fourth of which consists of the Aborigines: Indians, Eskimos and Aleuts. This is probably contrary to popular belief that Eskimos were the original inhabitants of Alaska. Speaking very generally, one could say the Eskimos live on the Northern coastal area; the Indians populate the interior and the Southeastern section, while the Aleuts live on what is known as the Aleutian Chain of Islands. Of course, this is a very rough ethonological background and certainly with travel and exchange as it is today, you may find any of these people in any part of Alaska.

There are 10 active APTA members and 2 inactive and 1 life member in Alaska. Physical therapists are employed with the following agencies: Alaska Territorial Elks Cerebral Palsy Commission, Alaska Crippled Children's Asso-

ciation, U. S. Public Health Service, Alaska Department of Health, the Army and Air Force Hospitals, as well as general hospitals in Anchorage, Fairbanks, and Seward.

The Elks program is patterned after similar programs sponsored as mobile units in some of the states. It is organized so that they cooperate closely with the local city health centers and with the Alaska Department of Health. All medical referrals are from the Orthopedic Consultant for the Alaska Department of Health. The Elks employ three therapists, and the therapy is set up as a home exercise program which is taught to the child and the parents. Therapists return to "check" the patients periodically and to evaluate the patient's progress and recommend changes or additions in the program. Equipment is stored in the different towns and is used in the homes. If desired, it is left in the home for regular use on a loan basis.

Mabel Nihoul, our chief delegate and the Elks therapist in Southeastern Alaska writes: "There are no roads between towns and villages so I fly from place to place on the locally operated amphibious planes. This is a wonderful way to travel up here as all the scenery is beautiful. It's a grand way to start a new week of work with a pleasant flight over winding water ways and between mountain ranges and glaciers. The scenery is ever changing with the seasons and the weather conditions. My home base is Juneau, the capitol of Alaska, where I work for one week; then I fly to Sitka, one of the oldest and most historic towns in Alaska for one week. The next week I work in Ketchikan, the first town of Alaska and the salmon and pulp mill capitol of the world. When in Juneau, I fly to Honnah, a small Indian village, and work one afternoon. I have 2 small Indian children whom I treat regularly. When in Sitka, I treat children both white and Indian as well as working with patients in the USPHS Hospital at Mt. Edgecumbe, Alaska. The patients I treat at the hospital are patients whom I have seen before their hospitalization or will follow up when they leave the hospital. In Ketchikan, I fly over to Metlaktla, a 10 minute flight, 2 mornings a week. These children are of the tribe of Tsimshiams who followed Father Duncan out of British Columbia and settled on Annette Island to establish a model community with its own sawmill and cannery. I drive from there to the other side of Annette Island where there is a community of Coast Guard, Civil Aeronautics, Pan Am Airline, and Public Health employees. This is the site of a large airfield where the large aircraft land for their first stop in Alaska.

Physical therapists located in the Anchorage area —(left to right) Belle Townsley, Mrs. Marilyn Williams, Mrs. Catherine MacInnes, Betty Jo Lawless.

"Since transportation here is so expensive, I plan my trips so that I see each patient 2 or 3 times a week when I am in his respective town, but then I can only get to each town every third or fourth week instead of every week and, as usually planned, I travel by car. Alaska is beautiful and an interesting place both for work and recreation. Off duty time can be spent hiking, hunting, fishing, boating or just enjoying the hospitality of the very friendly Alaskans, or traveling to historic or scenic spots. Belle Townsley is the Elks therapist placed in the Alaska Crippled Children's Center in Anchorage. She is our Recruitment Chairman. Position is pending for our mobile unit covering that area which can be reached by the highway network in the South Central area. This includes the Kenai Peninsula as far as Homer and Seward, as far north as Fairbanks, and flying to Kodiak Island."

Betty Jo Lawless, our Secretary, is employed with the Alaska Crippled Children's Association working in its treatment center. She says "Our case load has grown so rapidly that we have added Miss Townsley, Elks therapist to our staff. Speaking of our staff, it consists of Dr. Helen Dittman, Clinical Director and Speech and Hearing Therapist; she is also an inactive physical therapist, and we also have a psychologist and special education teacher.

"The ACCA treatment center is carrying a current case load of 185 patients. Our youngsters come from all over the territory and range in age from 12 months upward. We also service the

Kit MacInnes and her Siberian Huskies.

military bases located in Anchorage since the physical therapy departments there do not have facilities for children. At the present time, we are treating polios, cerebral palsies and a multitude of orthopedic conditions. In addition to our regular schedule, the P.T.'s attend the Alaska Department of Health and Greater Anchorage Health District combined Orthopedic clinics held bimonthly, as well as the Alaska Crippled Children's Center bimonthly C.P. clinic. These clinics are presided over by the two local orthopedic surgeons. There are four orthopedic surgeons located in Alaska, one in Sitka, two in Anchorage and one in Fairbanks."

Our President, Mrs. Marilyn Williams, and our Treasurer, Mrs. Catherine MacInnes, are employed by the U. S. Public Health Service–Alaska Native Hospital in Anchorage. In July of 1956, the Health Service took over all matters pertaining to Indian Health, and so automatically the aboriginal population of Alaska came under their care. There are in Alaska, seven other similar hospitals which serve the native population of the territory. Six of these are in the remote or outlying areas know as the "Bush" and the other is a 380-bed hospital at Mt. Edgecumbe, Alaska. The Mt. Edgecumbe and Anchorage Hospital (415 beds) because of their size tend to treat the more difficult and complex cases. Mrs. Williams writes:

"The Public Health Service Hospital in Anchorage serving as it does the native population, has as you would suspect, a great number of tuberculosis patients. In fact two floors alone are devoted to T.B. patients. From this, one can naturally assume that a great deal of thoracic surgery is done. However the status of a general hospital is maintained and services are provided in the following departments: general medical, surgical, orthopedic, pediatric, neurological, eye, ear, nose and throat, obstetrical, dental, tuberculosis, and outpatient sections. The Physical Therapy Department employs two therapists who receive and treat patients in any of the above mentioned services. We feel our work here is extremely interesting and I'm sure we are just not prejudiced in this. The cases are interesting and the diagnoses vary. Our department is very well equipped.

"I would like to take this opportunity to compliment our patients. They are cheerful, grateful, and the most uncomplaining patients I have ever seen. Often they do not speak or understand English and come from a simple village life to the complex routine of a modern hospital. The food is completely different, the relationship with "white personnel" may be a completely new experience. All this plus the mystery of their medical condition—why they are here and for how long may not be completely understood; yet, they bear it all with a smile and a politeness that is rare. They want only to get well and return home, but how patient they are. The inconvenience their illness may cause them, the complications of being ill a long time and a thousand miles from home are never shown to us. I feel I can sincerely say that one can not ask for better patients.

"It is not unusual to see Eskimos come in fur parkas, mukluks, and often carrying babies on their backs—or the Indians in mooseskin, mocassins, beaded so lovely and trimmed with unplucked beaver. The patients come by plane from the outlying areas. In the winter the planes are equipped with skiis and in the summer with pontoons or wheels, and it is true that in winter the patient may have reached the plane by dog team and in summer by boat.

"Mrs. Catherine MacInnes graduated from the University of Pennsylvania. She has been in Alaska for 11 years. I would like to mention she is a bit of a celebrity in her own right, holding the North American Women's Dog Racing Championship in 1955 and 1956. This year she was elected Outstanding Athlete of the Year for Alaska. She has two children and a husband who is an avid sportsman and hunter. They have a kennel of Siberian Huskies and she is a full time P.T. in our department.

"I graduated from Stanford University in 1946. In 1953 through the assistance of the Polio Assignment Service of the American Physical Therapy Association and the National Foundation for Infantile Paralysis I was sent to Alaska to assist in a polio epidemic. I liked it so well, I remained to work with Public Health Service and also to marry an Alaskan Indian.

"The Alaska Department of Health usually employs one therapist who travels. However due to current changes in their program, they do not have a therapist and use the facilities of the aforementioned agencies. The chief of their Nursing Section, Helen Hardigan, is also a physical therapist. Her offices are in Juneau, Alaska, and I might add she is our Chapter Representative on the Territorial Licensing Board for Physical Therapists.

"The military hospitals in Fairbanks and Anchorage conduct their P.T. sections as do other military hospitals in the states. There are also active departments in the three private hospitals located respectively in Fairbanks, Anchorage, and Seward."

All of us join together in sending greetings from Alaska and hope some of you will find your way up here.

Our best to all of you.

THE ALASKA CHAPTER OF THE
AMERICAN PHYSICAL THERAPY ASSOCIATION

Mission to Metlaktla with the Elks' mobile therapist.

Lucy Blair, Associate Director and Senior Consultant, Department of Professional Services; and Ruth Whittemore, formerly consultant with Miss Blair, had a vacation tour of Alaska following the Annual Conference in Seattle.

They thoroughly enjoyed meeting with the Alaska Chapter and visiting our members at work. Miss Blair and Miss Whittemore testified to the enthusiasm of our members in their adopted home in our "new state."

Cerebral Palsy Issue

The November 1958 issue of the Review will be designated a special issue on Cerebral Palsy in that all scientific articles will be of major interest to those who work with these patients. Content of the Cerebral Palsy issue will include:

Neurophysiology a Physical Therapist Should Know—Ernst Fischer, M.D.

The Development of Motor Control for Walking in Cerebral Palsied Children—Gladwynn P. Salway, M.A.

An Experimental Study in the Neonatal Guinea Pig on a Possible Cause of Cerebral Palsy—Eleanor Flanagan, A.B., and R. Frederick Becker, Ph.D.

Bases for Selection of Mobilization Technics—Harold Egli, B.S.

Teaching a Blind Cerebral Palsied Child to Walk—Ruth Pratt Rigg, M.S.

A Cerebral Palsied Child with a Secondary Cerebellar Tumor—Alexander Geller, M.S.

Versatile Parallel Bars—Margaret M. Prior, B.S., and D. La Vonne Jaeger, B.S.

Cane for Elbow Flexion Contracture—D. Jean Dutro, B.S.

The November issue will also carry a guest editorial by Harriette E. Gillette, M.D., Chief of Physical Medicine, J. Hillis Miller Health Center, University of Florida.

The National Foundation's New Program

To Our Professional Colleagues

It has by now become apparent that the fight against paralytic poliomyelitis, though still unfinished, is well on its way toward success. Even before the spectacular decline of polio, The National Foundation began a prolonged, intensive study of its own capacities, and of the health needs of the nation to determine where in the future this organization might be of greatest usefulness. During these investigations many medical experts in every health field were consulted.

No health program can succeed without the active interest and assistance of the medical and associated professions of this country. Therefore we want you to know about our new expanded program as it is being announced to the public.

The National Foundation's concept for the future envisages an organized force in the fields of medical research, patient aid, and professional education with specific goals initially and flexible enough to meet new health problems as they arise. In essence this is a logical projection of our previous work in disease prevention, patient aid, research, and professional education.

The broadened program, however, deals with much more than a single disease. At its core is expanded research to study viruses, the nature and behavior of cells, diseases of the central nervous system, arthritis and congenital malformations. Basic to this research program will be its freedom to follow new leads in whatever direction they point.

Arthritis and congenital malformations are, as you know, major causes of disability. The rheumatic diseases alone affect between 11 and 30 million persons in this country. Congenital malformations afflict some 250,000 American infants born each year.

In both of these fields The National Foundation will seek causes, preventives and remedies. As soon as feasible, starting in 1959, it will provide patient aid for children through 18 suffering from arthritis and children through 18 with birth defects of the central nervous system amenable to treatment and correction. It is expected that this initial patient aid program can later be expanded.

Since 1938, when The National Foundation was established, it has had and appreciated the good will and assistance of the health professions in the fight against paralytic polio. We are confident that our professional colleagues recognizing the urgency for the kind of research, patient aid and professional education The National Foundation will support, will join us in meeting these new challenges.

CATHERINE WORTHINGHAM PH.D.
Director, Department of Professional Education

Statement by Mrs. Franklin D. Roosevelt on National Foundation's New Program

When Mr. Basil O'Connor first told me of the plans for a new program for the National Foundation, my immediate reaction was great satisfaction—satisfaction because this valuable organization, founded by my husband to conquer polio and built up by the American people into a great American institution, was not going to be *lost* as a dynamic part of our American way of life, simply because it had succeeded in making possible a preventive for paralytic polio.

I have always been impressed with the way in which millions of people have responded to the March of Dimes. I think it shows how deeply devoted our people are to the well-being of their fellow men—how vitally interested they are in furthering health and giving a helping hand to those who are sick and disabled.

And then, when I read the outline of what the new program would *be*—its broad concept of fundamental research, its ideal of attacking those problems which *need* attacking, without the necessity for confining itself to one problem alone—I felt more than satisfaction. Frankly, I was thrilled. I had not expected anything so inspiring as this.

I believe many people will feel as I do—that this new program which has grown out of the polio effort sets a new standard for the American people in their voluntary efforts in the field of health. It is the first time, to my knowledge, that any organization has dared to dream and plan and act on such a broad scale, has had such basic faith in the American people that it could count on them for support of research, patient aid, and professional education in a *variety* of fields, rather than in one alone.

I think this faith is well founded. For a number of years I have been aware of the heightened interest of the ordinary man and woman in medical research. The public often is *ahead* of its leaders—in readiness to understand and to act in areas which they sense are *important* to humanity as a whole, even though they have no technical knowledge in those areas. I congratulate Mr. O'Connor and the trustees of the National Foundation for having had the vision and the courage to put before the public a new kind of health program, one that is called for in this day and age, one that will have far greater long-term impact, in my opinion, than any attack that could have been launched on a *single* problem, however important it might be.

I have often said in the past that the conquest of polio would have been a tremendous satisfaction to my husband, had he lived to see it. In 1938, when the National Foundation was formed, he had faith that something could be done to eliminate this crippling disease—far more faith than anyone at that time thought justified. But even he would have been surprised that a preventive vaccine would be available only 17 years after the establishment of the National Foundation.

Now, with a new vision of usefulness for the organization in which he had so much faith, I can only say that I am certain my husband would be thrilled, as I am—as we all are—were he with us today. He never had the opportunity to look beyond the then seemingly remote goal of polio prevention. But I am sure it would be his wish that the National Foundation, having achieved that goal, go on to even bigger things.

I congratulate the American people whose support will make such a plan feasible and workable. Theirs is the privilege of living in a society in which the creation of health and the destruction of disease are vital and voluntary undertakings.

Godspeed to the National Foundation.

Coming Meetings

October 13-15	National Rehabilitation Association, Asheville, North Carolina
October 13-16	American Association of Medical Record Librarians, Statler Hotel, Boston
October 19-23	American Public Health Association, Convention Hall, Atlantic City
October 19-24	American Occupational Therapy Association, Hotel New Yorker, New York City
October 20-23	American Academy of Pediatrics, Palmer House, Chicago
October 21-24	National Association for Retarded Children, Netherland Hilton Hotel, Cincinnati
October 21-24	American Dietetic Association, Benjamin Franklin and Bellevue Stratford Hotels, Philadelphia
October 24-28	American Heart Association, Civic Auditorium, San Francisco
November 6-8	Gerontological Society, Inc., Bellevue Stratford Hotel, Philadelphia
November 10-14	American Hospital Association —American Physical Therapy Association Institute for Physical Therapists, Bellerive Hotel, Kansas City, Mo.
November 16-20	National Society for Crippled Children and Adults, Statler Hilton Hotel, Dallas
November 17-19	Association of Military Surgeons of the United States, Hotel Statler, Washington, D. C.

Strike Back at Stroke

A recent publication of the Public Health Service, Department of Health, Education, and Welfare, *Strike Back at Stroke*, has been prepared to "help the doctor show what can be done for the stroke patient at home to help prevent or keep to a minimum the disability that often develops after a stroke."

The pamphlet was developed through collaboration with Josephine J. Buchanan, M.D., Chief, Physical Medicine and Rehabilitation Service, and Margaret Sexton, Chief Physical Therapist, of the District of Columbia General Hospital, Washington, D. C. Specialists in all phases of rehabilitation of the hemiplegic were consulted and provided criticism of the content. The American Physical Therapy Association was one of eight national organizations that provided advice in regard to the publication.

Reviewed and endorsed by the appropriate subcommittees of the American Medical Association, the booklet, 37-pages and fully illustrated, is now available at 40 cents per copy. Listed as Public Health Service Publication No. 596, orders should be directed to the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

Student Column

Our First APTA Conference

June, 1958, is a month that will long be remembered by at least four physical therapists. These four not only were graduated from the University of Michigan Curriculum in Physical Therapy during June but also attended their first APTA conference. What better way is there to get an "inside" view of our new professional organization.

Within the span of six days these four new members of the American Physical Therapy Association were duly impressed by the organization with which they were now to be identified. New graduates have many questions which must be answered, like, "what is going to be required of me professionally; how can I best serve this group; just how does membership in the group benefit me; and is my new job suited for me as a recent graduate." Attendance at the Conference in Seattle helped answer these and many more questions.

First of all, we had a chance to meet therapists from all sections of the country and all types of work situations. We met some of the people from the National Office and learned more about what they do and how they help each member. From the House of Delegates we became acquainted with some of the issues affecting us as well as how our business is conducted. The interest and enthusiasm displayed by the officers, nominees, staff, and other members was comparable to the interest of the group at a Saturday afternoon football game in Ann Arbor. The lectures, panel discussions, curbstone conferences as well as conversation with other members helped us to learn much more about some of the new technics being used in physical therapy. From the mixer, banquet, and barbeque we learned how this group can have fun. We also had a fine vacation enjoying the hospitality of the scenic Pacific Northwest.

To the American Physical Therapy Association we should like to say:

We are grateful to have attended the annual conference in Seattle. We now feel much better prepared to take our position in this organization and profession. It has also helped us to be better ambassadors for you. We were very fortunate to have had this experience and our only regret is that more students couldn't have joined us.

Thank you for inviting us and perhaps as we shed our student cloaks and gain some experience we can participate more actively in professional activities and be greater assets to this organization. See you in Minneapolis.

Marge Becker
Sharon McGovern
Linda Nelson
Connie Sarason

From the Patient's Viewpoint

In our study of rehabilitation problems at the University of Southern California, which includes among other things, bracing and gait training, we were requested to spend either an afternoon around campus or some time around our home neighborhood wearing a long leg brace and walking with crutches. It was also suggested that we should use the four-point gait for this experiment.

The following samples of our impressions were first written in response to a question on one of our tests concerning this experience, and are spontaneous replies.

First Student

The impressions I received varied according to the people I met or passed on the street.

1. Children would stop and stare, giving me an uncomfortable feeling.
2. Some adults would give a quick glance, then look away.
3. Other people would openly stare, even to the point of turning around to get another look.

On the whole, people were very kind and considerate of my condition. I suppose this was their way of feeling sorry for me.

In all cases the reactions of people made me feel very conspicuous about wearing braces and using crutches.

Second Student

My experience with braces and crutches in public consisted of practicing stair climbing in

front of the Physical Therapy Building, wearing braces and crutches to the Orange Cafe one afternoon, and taking crutches home.

Reactions of others:

First of all, people seemed inclined to stare at me in general; later they stared as if they were trying to diagnose my involvement. In several instances I noted extreme courtesy such as opening doors for me and so forth. Several times as I passed people and quickly turned around, I would catch them looking back at me for another glimpse. When I went home on crutches my wife and neighbors were extremely excited, thinking I had received an injury. Strangely enough, no one asked what was wrong with me.

My reactions:

I was not relaxed having people stare at me. At times I felt very helpless—especially when people would help me. I was also disappointed because no one had asked me about by disability—I must have been a poor actor.

THIRD STUDENT

First impression:

Inconvenient! It made me slower (and I'm slow anyway) and others had to wait for me—sometimes patiently—sometimes impatiently. I had lots of trouble with the four-point gait. It kept coming out two-point, and worse than that it was frequently crutch and leg on the same side and leaning toward the side in contact with the ground. Carrying books and crutch walking was a major problem. My books would keep slipping away and I'd have to slow down even more to retrieve them.

Second impression:

Uncomfortable! It happened that the brace I was wearing had an ischial ring. This was great when standing but not if I wanted to sit back in my chair for a while during a long afternoon class. Not being a very good fit, it also caused some pressure on my thigh which was uncomfortable and a good reminder that a patient's braces need to be checked frequently to see if they fit properly.

Third impression:

Awfully embarrassing! People in classrooms would watch and pity me as I passed the door or windows. Cars would stop and drivers would motion for me to cross. Being slowed down made this twice as bad. (Besides that, I was doubly embarrassed 'cause I knew I was quite healthy and not at all deserving of their patience and sympathy.)

You can see from these expressions of our impressions, that even though our experiences were different, that all of us had some similar feelings, especially embarrassment. We are now much more acutely aware of the social as well as the physical adjustment required of the patient who must have braces, crutches, or other supportive devices for functional activities.

JOE MCKENDRICK
MICHAEL BEVILACQUA
LARITA CORTSEN

Ohio State

A Career Day was held by University Hospitals in Columbus for all high school seniors interested in health careers. Hospital tours, skits, and demonstrations of treatment procedures were all included in the Physical Therapy Department program. Efforts of the students and staff were rewarded when one eighth of the students who had visited the department returned for interviews and conferences. These young people indicated that physical therapy is their first career choice.

Duke University

The Physical Therapy Class at Duke University has recently completed a survey of the Durham, North Carolina, area to find accomodations suitable for wheel chair travelers. The project was undertaken in response to a request in *The Paraplegia News* of June, 1958. This magazine announced its plan to publish a listing of motels, hotels, restaurants, and places of entertainment where wheel chair travelers may conveniently be served. Requirements for each were given.

Motels, hotels, and restaurants were visited by members of the Physical Therapy Class, door widths were measured, steps noted, and parking space and other features considered in order to determine acceptability for use by a paraplegic. Information about churches and places of entertainment was also obtained and submitted to *Paraplegia News*.

The two most frequent obstacles to suitability for a wheel chair customer were found to be steps and narrow bathroom doors. These reduced the number of places available considerably.

The project has served to make class members more aware of a paraplegic's problems, and more conscious of usually unnoticed items: steps and door widths.

Schools Offering Courses in Physical Therapy

APPROVED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

Schools offering the four year program leading to a baccalaureate degree accept high school graduates and transfer students. Schools offering the 12 to 16 months' program leading to a certificate accept students who have completed all or most of their undergraduate work providing they meet certain course requirements. Recipients of a degree and/or certificate have equal professional status. For specific information regarding each school's entrance requirements, curriculum, tuition and other fees, write to the physical therapy director indicated below. All students should investigate course requirements *early*.

	Degree	*Certificate*
CALIFORNIA		
Mary J. Dodge School of Physical Therapy Childrens Hospital Society 4614 Sunset Boulevard Los Angeles 27	‡	†
Ronald A. Hershey School of Physical Therapy College of Medical Evangelists Loma Linda	†	†
Lucille Daniels Division of Physical Therapy Stanford University Stanford (Palo Alto)	†	†
Margery L. Wagner Curriculum in Physical Therapy University of California The Medical Center San Francisco 22	†	†
Charlotte W. Anderson Department of Physical Therapy University of Southern California Los Angeles 7	†	†
COLORADO		
Dorothy Hoag Curriculum in Physical Therapy University of Colorado Medical School Denver 20	†	†
CONNECTICUT		
James M. Bauer Acting Director School of Physical Therapy U 101 University of Connecticut Storrs	†	
ILLINOIS		
Elizabeth C. Wood Course in Physical Therapy Northwestern University Medical School 303 East Chicago Avenue Chicago 11	†	†
IOWA		
Olive C. Farr Physical Therapy State University of Iowa Hospitals Iowa City		†
KANSAS		
Ruth G. Monteith Section of Physical Therapy Education University of Kansas Medical Center Kansas City 12	†	†
LOUISIANA		
Isadore Brown, Acting School of Physical Therapy Charity Hospital of Louisiana New Orleans 12		†
MASSACHUSETTS		
Adelaide L. McGarrett Physical Therapy Department Boston University Sargent College 785 Commonwealth Avenue Boston 15	†	†
Constance K. Greene Department of Physical Therapy *Bouvé-Boston School, Tufts University Medford 55	†	
Shirley M. Cogland *Program in Physical Therapy Simmons College-Children's Hospital 300 Longwood Avenue Boston 15	†	†
MICHIGAN		
Virginia Wilson Curriculum in Physical Therapy University of Michigan University Hospital Ann Arbor	†	†
MINNESOTA		
Darrell D. Hunt School of Physical Therapy Mayo Clinic Rochester		†
Wilbur L. Moen Course in Physical Therapy University of Minnesota 860 Mayo Memorial Hospital Minneapolis 14	†	

* Accepts women students only.

‡ Baccalaureate degree available from an affiliating college or university.

	Degree	Certificate
MISSOURI		
Sr. M. Imelda, S.S.M. Department of Physical Therapy St. Louis University 1325 South Grand Boulevard St. Louis 4	†	
Beatrice F. Schulz Department of Physical Therapy Washington University School of Medicine 660 So. Kingshighway St. Louis 10	†	
NEW YORK		
Dorothy L. McLaughlin Albany Medical College Division of Physical Therapy Albany 8	‡	†
Mary E. Callahan Courses for Physical Therapists Columbia University College of Physicians & Surgeons 630 West 168th Street New York 32	†	†
Elizabeth C. Addoms Physical Therapy Curriculum School of Education, New York University Washington Square East New York 3	†	†
Mildred F. Heap Program in Physical Therapy University of Buffalo 2183 Main Street Buffalo 14	†	†
NORTH CAROLINA		
Helen Kaiser Division of Physical Therapy Box 3403, Duke Hospital Durham		†
OHIO		
Robert D. Kruse Course in Physical Therapy Frank E. Bunts Educational Institute 2020 East 93rd Street Cleveland 6		†
Gladys G. Woods School of Physical Therapy Ohio State University University Hospital Columbus	†	†
OKLAHOMA		
Thelma Pedersen School of Physical Therapy University of Oklahoma, Medical Center Oklahoma City 4	†	†
PENNSYLVANIA		
Dorothy E. Baethke Division of Physical Therapy University of Pennsylvania 3901 Pine Street Philadelphia 4	†	†
Kathryn Kelley Curriculum in Physical Therapy D. T. Watson School of Physiatrics Leetsdale	‡	†
PUERTO RICO		
(All classes given in Spanish) Lutgarda V. Piñeiro School of Physical & Occupational Therapy Candelaria & Mandry Streets Stop 22, Santurce	†	†
TEXAS		
Doris E. Porter Grady Vaughn School of Physical Therapy Baylor University Hospital Dallas 1	†	†
Cecelia J. Lee School of Physical Therapy Hermann Hospital Houston 25	‡	†
Ruby Decker School of Physical Therapy The University of Texas Medical Branch Galveston	†	†
VIRGINIA		
Susanne Hirt School of Physical Therapy Medical College of Virginia Richmond 19	†	
WISCONSIN		
Beth J. Phillips Curriculum in Physical Therapy Marquette University School of Medicine 561 North 15th Street Milwaukee 3	†	
Margaret Kohli Course in Physical Therapy University of Wisconsin Madison 6	†	
U. S. ARMY MEDICAL SERVICE		
*Physical Therapy Course Army Medical Service School Brooke Army Medical Center Fort Sam Houston, Texas Write to: The Surgeon General Department of the Army Washington 25, D. C. Att.: Personnel Division		†

* Accepts women students only.

‡ Baccalaureate degree available from an affiliating college or university.

Please direct all inquiries regarding tuition, entrance requirements and other specific information to the school and *not* to the American Physical Therapy Association.

Abstracts

Dupuytren's Contracture

R. D. Larsen and J. L. Posch (Department of Surgery, Wayne State University College of Medicine, Detroit, Michigan), J. BONE SURG. AM. VOL., 40-A: 773-792, July 1958

Studies show that Dupuytren's contracture, occurring eight times more frequently in men than in women, most often is bilateral though right hands predominate in unilateral involvement.

Nodules in the palm of the hand are early signs of the disease, longitudinal bands forming from a collection of nodules are often located in line with the ring finger. The bands draw the metacarpalphalangeal and proximal interphalangeal joints into flexion. Rate of progression is variable and the disease may be arrested spontaneously at any stage.

Etiology of Dupuytren's contracture is unknown. Trauma does not seem to play an important role; the greatest incidence occurring in patients not performing manual labor. However, heredity does appear to be a factor.

Gross pathology shows shortening and retraction of the palmar fascia but it is not known whether this is secondary or primary. Pretendinous bands of palmar fascia pass into superficial digital fascia. There is increased size and numbers of the elastic and collagen fibers but no inflammation is noted. Often the skin is intimately adhered to the thickened fascia. This fascia may vary in color from glossy white to greyish or yellow. Tendons, vessels and nerves may be surrounded and angulated by the fibrous connective tissue but there is no invasion of the flexor tendon sheaths.

Over the years the microscopic pathology has been described in various ways: 1) benign hyperplasia of fibrous tissue arising in the palmar aponeurosis, 2) inflammatory changes arising in the interstitial connective tissue in the palm and secondarily involving the aponeurosis, 3) benign neoplasm, 4) cellular hyperplasia responding to rupture of collagenous fibers of the palmar aponeurosis.

Histopathology reveals dense collagenous tissue with elongated nuclei, the cellular areas showing more prolifration. Under high power microscopes, some iron pigment has been found in the center of a hypercellular area but not during the mature stages. There is increased vascularity of the capillaries though the larger vessels remain normal.

Pathologically there appears perivascular inflammation in the fatty and interstitial tissue of the palm but not near the vessels within or near the actively proliferating tissue. Non-encapsulated nodules of varying size may be found within the aponeurosis. As maturation progresses, vascularity decreases.

Treatment of Dupuytren's contracture has included local injections which were of no avail. Oral tocopherol and alpha-tocopherol permits temporary softening as does hydrocortisone. Radiation therapy occasionally has lessened tightness resulting in good function but surgery remains the most effective means of treatment. Fasciotomy is often preliminary to more drastic surgery such as excision of diseased fascia, or removal of all the palmar fascia. Early surgery is preferred but it is not known whether or not there would be more progression of the disease. Physical therapy follows postoperatively to work out the stiffness and results are good in 80–90 per cent of the cases.

Effects of Breathing Exercises on Pulmonary Emphysema

J. B. Redford (Mayo Foundation, Rochester, Minnesota), ARCH. PHYS. M., 39: 357-365, June 1958

No laboratory methods are yet devised for measuring all factors that may be improved by breathing exercises for the emphysema patient.

The purpose of this paper is to consider the possible effects of breathing exercises on pulmonary emphysema by comparing five objective laboratory studies. The author points out that there are few objective studies in the literature to support the value of such exercises but that the subjective improvement of the patient cannot be dismissed lightly.

Hypertrophic pulmonary emphysema is defined as a disease process of the lungs marked by diffuse bronchial obstruction, by changes in alveolar walls producing enlarged air sacs, by diffuse changes in the interstitial lung tissue, and by narrowing and thickening in the walls of the pulmonary blood vessels with a decrease in the capillary bed.

A discussion of the etiological factors involved in the disease and pathologic physiology is presented. Five studies of the problem are summarized which evaluated the effects of breathing exercises. The methods of study and results are summarized in table form. None of the studies gave detailed explanations of the exercises used but the author states, "it can probably be safely assumed that they were basically similar to those originally proposed by the Asthma Research Council."

One study (Campbell and Friend) evaluated the immediate action of the exercises by simultaneous electromyographic and spirometric recordings. The immediate effects of the breathing exercises were as follows:

1. Decreased rate and increased depth of breathing;
2. Increase in effective tidal volume with increase in effective minute volume;
3. Mixing efficiency and functional residual capacity unaltered;
4. A lowered respiratory level with decreased chest inflation;
5. Prolongation in expiration;
6. Increased activity in the abdominal muscles, particularly the external obliques; little reduction in activity of the sternomastoids.

The author concludes there is undoubtedly improvement in the efficiency of ventilation when these exercises are practiced and the effective minute volume is increased. He feels it is in the decreased amount of mechanical work required for breathing that patients derive their greatest benefit from the exercises.

Administrative Phases of a Child Amputee Program

Carleton Dean (Crippled Children Commission, Lansing, Michigan), AM. J. PUB. HEALTH, 48: 750-753, June 1958

The author proposes that any state or area having two million population should develop a program for child amputees. This program would be aimed at methods to reduce deformity through prevention and correction created by members of a medical and prosthetic team continuously studying new prosthetic developments. A hospital or rehabilitation center designed for inpatient and outpatient service would be essential and a limb shop with a certified prosthetist should be easily accessible.

Surveys show that 7 of 8 children

do not wear their prostheses because of poor fit, inadequate training, or outgrowing of the artificial limb. Hence, the program would initially include known amputees and gradually add amputees both congenital and traumatic, discovered through hospitals, physicians, health departments, and teachers. Awareness of growth changes would stimulate periodic check-ups.

Education of professional and lay people appears to be of utmost importance. The very young can and should wear an appliance. Early fitting permits adaption physically and emotionally; postponement often results in disuse atrophy, contractures, and formation of poor habit patterns. Follow-ups are essential for reevaluation and for repairs. Self repair of the prosthesis is neither approved nor condoned.

Peroneal Paralysis—A Hazard of Weight Reduction

Bertram E. Sprofkin (Department of Medicine [Neurology], Vanderbilt University School of Medicine, Nashville, Tennessee), A.M.A. ARCH. OF INT. M., 102: 82-87, July 1958

For many years the dangers of obesity have been proclaimed by both medical and lay people. Accordingly, a reduction diet is prescribed by the physician as a part of the treatment of a wide range of ills. Moreover, the desirability of the streamlined appearance is being stressed by the fashion experts. Modern supermarkets feature whole departments devoted to dietary foods to meet the needs of their calorie conscious consumers.

It has long been known that weight loss is an important predisposing factor of pressure paralysis of the peroneal nerve, often referred to as leg-crossing palsy. The almost universal interest in reduction diets, plus the disposition to spend long hours sitting with the legs crossed before a television may lead to an increased incidence of peroneal paralysis with foot drop.

The common peroneal nerve includes fibers of spinal segments L-4 through S-2. This nerve passes behind the upper portion of the soleus muscle to reach the posterior aspect of the fibular head, where it may be palpated below the neck of the fibula. Here it passes anteriorly between the peroneus longus and the bone as it divides into the superficial and deep peroneal nerves. Since the deep peroneal branch innervates the dorsiflexors of the foot and extensors of the toe, any interruption in function will result in foot drop and the characteristic "steppage gait".

Wherever a peripheral nerve is superficially located it is susceptible to damage by compression. The radial nerve about the humerus, the ulna nerve in its condylar groove, and the peroneal nerve as it winds about the neck of the fibula are classical examples of nerve vulnerability to trauma. This susceptibility is further enhanced by neuropathogenic factors such as alcoholism, diabetes, and malnutrition.

The author presents 9 illustrative cases of peroneal palsy. All of these have a history of weight reduction with pressure, without indications of a contributing neuropathy. He also refers to a series of 29 patients studied by Woltman.

From these two series the author concludes that the most important factor in the production of compression neuropathy of the common peroneal nerve, and its branches (leg-crossing palsy) are weight loss and sitting for long periods with legs crossed. The frequent therapeutic weight reduction diets and prolonged inactivity of television viewers must be considered in relation to this traumatic mononeuropathy.

Physical Therapeutic Measures in the Treatment of Chronic Bronchopulmonary Disorders

William F. Miller (Department of Internal Medicine, University of Texas, Southwestern Medical School, Dallas), AM. J. MED., 24: 929-940, June 1958

Drug therapy is only a partial answer to the problem of breathing difficulty in chronic bronchopulmonary disease. Breathing training and education in relaxation should be included in the treatment of these conditions.

Since the focus of the problem in patients with asthma and emphysema is air-trapping in the lungs, the emphasis in breathing training is placed on expiration. A forced expiration through pursed lips followed by a relaxed slow inspiration decreases the air-trapping and gives increased alveolar ventilation. General body exercise increases air-trapping and for this reason such activity is approached gradually and with great caution only as the breathing improves. If given before the patient's condition warrants it, he may begin coughing and become emotionally disturbed. This only increases the air-trapping and distention of the lungs.

The patient must be thoroughly educated as to the purpose of breathing training. He must understand that new habits are necessary and that to gasp for breath only serves to force more air into already distended lungs. A preliminary examination is necessary to analyze any faulty breathing pattern. Training in muscular relaxation along with breathing exercises conserves energy and is a prerequisite to muscle re-education. Initially, diaphragmatic breathing is stressed. In the early stages this is performed in a supine position with the head 20 degrees to 30 degrees lower than the feet. A sand bag weighing 8-10 pounds is placed on the lower abdomen. As the patient becomes more adept at diaphragmatic breathing, the lower thoracic area is included, gradually proceeding to the upper chest. The "head down" position may instigate coughing. Sometimes this may be controlled by reassuring the patient and explaining to him that secretions are draining into the larger bronchi and that he should be persistent and try to remove these by controlled coughing. Diaphragmatic breathing is taught first in the lying position, but progression to sitting and standing positions are goals to be kept in mind. When walking or exercise is started, it should be emphasized that the activity must be performed in rhythm with the breathing. There should be no attempt to adjust the rhythm of the breathing to the exercise. Short training periods repeated at frequent intervals are often necessary.

Abdominal supports or a pneumoperitoneum sometimes help to maintain the diaphragm in a relaxed elevated position and there are other aids which may be used for bronchopulmonary disorders. Breathing and coughing improve with any increase in excursion of the diaphragm which, in turn, aids in evacuation of secretions blocking the air passages.

Strengthening or relaxation exercises for accessory muscles is encouraged. Posture should be considered but a very erect stiff posture is dangerous since it places the chest in its optimum position for inspiration. For this reason, walking is taught in a forward bending position.

Improvement will be noted in many patients with bronchopulmonary diseases but treatment must be continued indefinitely.

Rotation Movements of the Spine with Special Reference to Scoliosis

Robert Roaf (Robert Jones and Agnes Hunt Orthopaedic Hospital, Oswestry, England), J. BONE SURG., BRIT. VOL., 40-B: 312-332, May 1958

In the latter half of the nineteenth and early part of the twentieth centuries surgeons and anatomists studied the movements of the spinal column, both in the living and in the cadaver. With the development of radiology, spinal movements were reinvestigated, but there has been comparatively little study in this field recently. Therefore, the present study was undertaken to reexamine the normal movements of the spine, noting in particular whether the spine behaves as a tube of unequal flexibilities, and whether side-bending and rotation are inevitably linked as had been stated in earlier studies. This study also reexamines the relationship between movements of the normal spine and the deformity of scoliosis.

For the purpose of this investigation there were two sources of material: 1) spines of stillborn babies, first preserved by freezing and then dissected free of all muscles after thawing; and 2) radiological examination of the spines of normal children. The results are summarized and are illustrated very clearly by a series of 43 figures.

It was found that the young spine is a tube of roughly equal flexibilities; the axis of rotation is in the region of the posterior longitudinal ligament; lateral flexion and rotation normally occur independently and in both the thoracic and lumbar regions; finally, severe scoliosis is not just an exaggeration of normal movement: it is fundamentally an abnormal rotation—often three to four times the normal range.

There are two types of scoliosis, which occur independently of etiology. The first is an uncommon type in which lateral flexion is the dominant element. The curve usually remains relatively mobile, is fairly easily corrected, has less tendency to relapse after fusion, and presents minimal rib deformity. Rotation is the main feature of the second type of curve. This curve tends to be progressive; it soon becomes rigid and resistant to correction, and tends to relapse after fusion. Because of the rotation, certain mechanical factors inevitably come into play, which tend to increase the deformity. These forces responsible for progressive scoliosis are dynamic and active, not passive. It is the author's belief that rotation is usually the dominant factor and that correction and control of severe scoliosis can only be achieved by concentrating on the rotation deformity.

The Surgical Reconstruction of the Upper Extremity Paralyzed by Poliomyelitis

E. R. Schottstaedt, M. J. Larsen and F. C. Bost (Franklin Hospital, San Francisco), J. BONE SURG. AM. VOL., 40-A: 633-643, June 1958

In dealing with paralyzed upper extremities the allover gain is of primary importance. The function remaining determines the projected goal but the gain should not be offset by an important loss. There must be a balance between stability and mobilization.

For muscle transference, several things should be taken into consideration:

1. The muscle should be of sufficient size and strength to be effective in its normal position because it will be less effective when transferred.
2. Transference should be in a straight line or with a free-gliding pulley to prevent friction.
3. Muscles essential to body mechanics should not be moved unless compensations are made.
4. The attachment must be secure, preferably to bone.
5. Adequate postoperative care and fixation must be provided with function resumed as early as it can be safely carried out.
6. The musculotendinous unit should be under sufficient tension.
7. Muscle fiber length must be adequate for good range of motion.
8. The neurovascular bundle should be undamaged.
9. The muscle should not have two separate functions.

Often it proves necessary to supplement surgical reconstruction with arm bracing. Specific procedures are outlined briefly.

Grasp or some portion thereof is of utmost importance. Thumb and finger flexion may be accomplished by wrist flexors. Arthrodesis of the wrist is indicated if there is no active wrist extension or if these muscles are transposed for finger flexion. Finger extensors cannot provide enough wrist extension and may hyperextend the metacarpophalangeal joints necessitating capsulectomy or arthrodesis of these joints or the proximal interphalangeal joints. The brachioradialis can be an effective finger flexor within a middle range of joint motion as can the biceps via a free tendon graft. Irwin uses flexor tenodesis with the flexor digitorum profundus transferred to the radius and activated by wrist extensors.

Extension of the thumb and fingers is less important than flexion but may be accomplished by transplanting wrist flexors, wrist extensors, or the brachioradialis. Substitution for paralyzed interrosei with intact flexor digitorum sublimis and flexor digitorum profundus is possible by transplanting the sublimis into the extensor aponeurosis expansions.

The procedure deemed best for obtaining opposition is the removal of the flexor digitorum sublimis tendon from its insertion on the ring finger and channeling it around the flexor carpi ulnaris tendon at the wrist, reinserting it to the dorsal ulnar surface at the distal end of the first metacarpal bone and the proximal phalanx of the thumb. This is most successful if the first dorsal interroseus is active, or is replaced by a transplant if it is not active.

For adequate transference of muscle power from the forearm to the fingers, wrist stability is essential. This is accomplished through active wrist musculature, transferred volar wrist muscles to the dorsal surface, or by arthrodesis. Wrist flexion is never sought specifically and if there is deviation in extension, the stronger muscle is transplanted nearer the midline.

Pronation and supination are considered more important than wrist motion. Supinators and pronators can reverse their function by reattachment just opposite the original insertions. Supination is promoted by transposing the palmaris longus and flexor carpi ulnaris tendons around the ulnar to the radial shaft. The latissimus or pectoralis major can facilitate supination and elbow flexion by reinserting the coracoid attachment to the radial tuberosity.

After grasp, elbow motion or stability is most important. Steindler's procedure for elbow flexion has been most successful; moving the flexor mass from the medial humeral epicondyle proximally on the humeral shaft. These muscles must be strong to obtain satisfactory results. Ideally, the patient may lift 15

pounds but full elbow extension is not usual nor desirable. An elbow bone block is occasionally inserted; at other times the long head and lateral head of the triceps are moved anteriorly for greater midflexion range usefulness. There are few indications for replacing elbow extensors, but Ober's roll back operation or the latissimus dorsi may be used.

For scapulohumeral function and stability L'Episcopo's procedure aids external rotation and Hildebrant's procedure improves humeral forward flexion and abduction. The short rotator cuff and posterior deltoid can replace the anterior and middle deltoid; abduction being gained in some instances by transferring the pectoralis major, leaving the insertion undisturbed, turning the muscle upside down and postoperatively holding it in abduction and flexion. Arthrodesis should be performed only if active replacement is impossible. Forward flexion 30 degrees and 40-50 degrees abduction are most satisfactory functionally and cosmetically. The distal portion of the clavicle may be excised to increase excursion range but is usually unnecessary within the 8 to 14 year old age group.

Scapulothoracic function is separated into three muscular factors representing three major force-couple factors: the upper trapezius and lavator scapulae; the middle trapezius, rhomboidei and lower trapezius; the serratus anterior. Function of the first muscular factor may be supplemented by moving the levator scapula laterally and attaching the origin of the sternocleidomastoid to the outer edge of the acromion. The serratus anterior pulls the scapula forward if the adductors are weakened so the scapula may be suspended from the cervical and thoracic extensor musculature, from the vertebral spinous processes or the scapula may be stabilized by fascia lata between the two scapulae. Serratus weakness has been supplemented by transplants of the pectoralis major, the pectoralis minor, teres minor or latissimus dorsi.

Trunk stability cannot always be accomplished by corseting and other external support. Therefore, it may be appropriate to use Lowman's fascial abdominal transfer by crisscross straps and lateral bands from fixed ribs to the iliac crest.

This article does not discuss all surgical approaches to the paralytic problem but is designed to stimulate thinking and ingenuity along these lines.

Comparative Effects of Relaxant Drugs on Human Skeletal Muscle Hyperactivity

Francis A. Vazuka (Section of Neurology, Temple University School of Medicine, Philadelphia, Pennsylvania), NEUROLOGY, 8: 446-454, June 1958

The disabling and painful spasms in patients with various neurologic diseases are triggered off as a result of stretching the muscles by movement and sudden jarring, and also by cutaneous sensory stimuli. The alleviation of these abnormal reflex responses would result in clinical benefits to the patient. This study compares the effects of three relaxant drugs—Robaxin, Equanil and Flexin—on 11 persons with neuromuscular disorders. These drugs are believed to be centrally acting types of muscle relaxants which appear to exert their depressing effect on subcortical and spinal polysynaptic neural pathways.

A large part of this paper presents the methods of evaluating the effects of these muscle relaxants. The effects on spasticity, ankle clonus, tonic and clonic extensor spasms, and the changes in functional capacity were studied.

The degree of muscle tone was determined by the amount of resistance encountered during passive flexion and extension of various joints, and by the ease of producing spasms on sensory stimulation. Reflex muscle spasms produced by changes in posture, shifting of the body while sitting, wheeling a chair, as well as those produced by voluntary acts such as shaving, eating, dressing, and walking were recorded from observation. Self-care and ambulation capabilities and complete neurologic examinations were also recorded photographically on motion picture film. Functional tests, such as buttoning clothing, shoelacing, walking on a level surface, and climbing stairs, were standardized and performance time was measured. An evaluation of voluntary muscle power was measured by dynamometer readings at standard positions in the lower extremities. Strength and one-minute fatigue studies of each hand grip were performed with a clinical dynamometer.

Differences in reflex activity were also recorded by electromyography. Differences in the electrical action potentials induced by standardized myotatic, nociceptive, and stretch stimulations were detected. A reduction in the size of the electrically recorded reflex responses was used as an indication of drug activity. These results were found to correlate well with the degree of clinical relaxation induced in the muscles.

The major benefit derived by the 11 patients was a partial alleviation of muscle hyperactivity, which in turn allowed for greater self-care capabilities and easier ambulatory capabilities.

Community Trials of BCG Vaccination

C. Palmer, L. Shaw, and G. Comstock (Tuberculosis Program, Division of Special Health Services, Bureau of State Services, Public Health Service, Department of Health, Education, and Welfare, Washington 25, D. C.), AM. REV. TUBERC. 77: 877-907, June 1958

A report has been made after a follow-up period of six to seven years of two controlled trials of BCG vaccination, initiated and directed by the Public Health Service. The trials took place in Puerto Rico and in a community formed by Muscogee County, Georgia, and Russell County, Alabama. More than a quarter million people were in the study; 112,000 were tuberculin reactors, and 144,000 were nonreactors who were subjected to an arbitrary scheme to vaccinated and nonvaccinated (control) groups.

The most impressive findings of these trials was that the risk of developing tuberculosis was much greater for persons who were tuberculin reactors on entry than for those who were nonreactors. At this time it was believed that tuberculin reactors having passed through a period after infection had acquired resistance to the disease, and that most of the new cases were destined to arise in those not yet infected. This was one of the main arguments for the use of BCG.

Of the total cases that appeared during the follow-up period, 75 per cent were among reactors; therefore, only 25 per cent of the cases that would have appeared among the initial nonreactors could have been prevented if vaccination had been completely effective. Among the nonreactors in Puerto Rico, there were 31 per cent fewer cases among the vaccinees than among the controls. In the Muscogee-Russell trial, the difference was 36 per cent. This, applied to the 25 per cent of the cases which would have appeared in those who could have been vaccinated,

amounts to a reduction of 8 to 9 per cent of the total tuberculosis expected during the 7 year period.

The low case rates among nonreactors can be directly attributed to the present low risk of acquiring new infections. This is due to the successful application of other methods of tuberculosis control—case finding, isolation, and treatment of active cases of the disease.

With the rapid decline in tuberculosis infection, the tuberculin test is becoming increasingly more valuable for epidemiologic, case-finding, and diagnostic purposes. These uses of the tuberculin test are destroyed by vaccination. As those who are already infected are now the group at greatest risk, it is upon them that tuberculosis control activities should be focused if the disease is to be eradicated. The position is stated that in most situations in this country today the advantages of vaccination are outweighed by the disadvantages.

Carpal Bossing: A Common Clinical Entity

Robert L. Larson, Marco A. Lazcano and Joseph M. Janes (Mayo Clinic, Rochester, Minnesota), PROC. MAYO CLIN., 33: 337-343, June 25, 1958

In 1931, J. Fiolle, a French surgeon, first reported a symptomless exostosis at the junction of the second and third metacarpals and the capitate bone of the wrist. He called the deformity "carpe bossu" (carpal bossing). Only 18 cases have been reported in literature, but the occurrence is more common than formerly believed.

Several theories have been proposed in regard to the etiology—including hypertrophic functional adaptation to strains, a congenital origin, secondary to a sprain, and trauma with resultant rupture of the dorsal ligament between the capitate bone and the third metacarpal.

The usual complaints are mild aching and easy fatigability of the wrist. Occasionally a clicking sensation is noted. The symptoms are usually episodic in nature with no history of known trauma or injury to the hand or wrist. The acute phase may last 24 hours followed by a complete disappearance of symptoms 24 hours later.

In an attempt to answer some of the questions concerning etiologic factors, frequency of occurrence, and frequency of symptoms, a study was made on three different groups. Group 1 consisted of 100 adults selected at random. On examination 26 persons in this group were found to have a prominence in the described area. Group 2 was composed of 20 physical therapists. Ten (50 per cent) were found to have carpal bossing. Group 3 consisted of 50 children whose ages ranged from 2 to 15 years. Clinically, bossing was found in only one child.

Analysis of the data would seem to indicate that the production of this phenomenon is related to a stress factor associated with use. Since the major axis of stress in the wrist is through the second and third metacarpals, the capitate bone, and the scaphoid-semilunar joint, the third metacarpalcapitate joint receives much of the stress of normal wrist function. It seems probable, therefore, that carpal bossing is merely a physiologic overgrowth of bone in response to this stress factor. This adaptive bone growth could well be classified under Wolff's law.

Investigation of Abdominal Masses by Pulsed Ultrasound

Ian Donald, J. MacVicar, and T. G. Brown (University of Glasgow), LANCET, LOND., 1: 1188-1194, June 7, 1958

One of the properties of ultrasound is that it can be propagated as a beam. When a beam of ultrasound crosses an interface between two substances of different acoustic impedance five things happen:

1. Some energy is reflected.
2. Some energy is transmitted into the second medium but is somewhat attenuated.
3. Some refraction may occur.
4. Some of the energy may be absorbed and produce heat.
5. Cavitation may be produced.

The phenomena of reflection of a pulsed ultrasound beam may be used for diagnostic purposes. It is possible to record and map echoes from the reflecting interfaces of various body tissues.

The investigation by the authors to determine the value of ultrasound for diagnostic purposes was begun by using the method of presentation which is practiced in industry for detecting flaws in homogeneous materials. Other methods used by prior investigators were later tried and finally the authors describe a scanning and plotting method which they produced to enable each individual part of the surface of the structure under investigation to be scanned by the ultrasonic beam from a large number of different angles.

The scanning technic was used on 100 patients. Most of the cases were the routine ones found in the gynecological and obstetrical departments. Large intra-abdominal masses, including the gravid uterus and pelvic tumors were investigated by the echo patterns obtainable. Masses containing fluid were easily but crudely demonstrated.

The possible harmful effects of diagnostic ultrasound were discussed but thought to be negligible. Experimental research on newborn cats indicated that there were no adverse effects from the intensity of pulsed ultrasound used for diagnostic purposes in this investigation.

The authors state that their experience of 78 cases in which diagnosis by pulsed ultrasound was verified by laparotomy and subsequent histology indicates that although ultrasonic diagnosis is still very crude, its possibility in the future is an exciting prospect. At present the findings are not of practical importance but do encourage further effort, in that a useful diagnostic weapon may be provided with a refinement in technic.

Trick Movements in Knee Extensions

Ernest R. Hill, PHYSIOTHERAPY, 44: 137-138, May 1958

The treatment of any conditions affecting the knee joint directly or indirectly will include quadriceps exercises. With the aid of trick movements, knee extension may be achieved without the quadriceps muscles doing any, or at least not their proper share of the work.

Knee extension can be achieved by an extension at the hip joint brought about by the hamstrings working with reversed origin. Leg raising in a lying position brings the quadriceps into action but they often work only statically, the leg raising being achieved by hip flexion. The third trick movement is extending the knee by dorsiflexing the foot, thereby stretching the achilles tendon and allowing the gastrocnemius to extend the knee by pulling with reversed origin.

The author excludes the trick movements by placing a sandbag under the thigh and increasing the

flexion at the knee joint to such an extent that only a contraction of the quadriceps muscles will raise the leg from its support. The patient is also instructed to plantar flex the foot before extending the knee to rule out the third movement.

Responses of Peripheral Veins of Man to Prolonged and Continuous Cold Exposure

J. E. Wood, David E. Bass, and P. F. Iampietro (Department of Medicine, Boston University School of Medicine, Boston, Massachusetts), J. APPL. PHYSIOL., 12: 357-360, May 1958

Five healthy young males were subjects in a study to determine the effect of prolonged cold exposure on the pressure-volume characteristics of the veins as well as on peripheral blood flow and on venous pressure. They lived in a control room temperature of 80 degree F. for two weeks, then in a cold room temperature of 60 degrees F. for two weeks, and finally in a recovery room temperature of 80 degrees F. for two weeks.

Venous volume of all subjects decreased upon exposure to cold and reached its lowest point on the second and third cold days. The values of the entire cold period were significantly lower than either control or recovery values.

Mean venous pressure rose during the cold exposure above control levels and remained so until the last day. Individual patterns of response showed an attainment of a peak during the cold, with a subsequent drop to or toward control values. All venous pressures had returned essentially to control values by the fourth day of the recovery period.

The cold stimulus resulted in a marked decrease in blood flow. The lowest blood flow observed in each man occurred within the first three days; it tended to increase slightly as the cold exposure continued.

The data reported shows that a marked peripheral venous constriction, decrease of peripheral blood flow and increase of venous pressure occurred as initial responses to a cold environment. These responses tended to remit as the cold stimulus continued. Three of the subjects showed changes indicative of a gradual venodilation during the cold period, which suggests veins may dilate despite a continuing constrictor stimulus.

Peripheral Nerve Injuries: Principles of Treatment

John E. Scarff (The Neurological Institute of New York, New York), MED. CLIN. N. AMERICA, 42: 611-640, May 1958

In the peripheral nerve, regeneration is impossible if the nerve cell body is destroyed. However, if the neuraxone is divided, the proximal end resumes growth and the distal stump forms a natural pathway for the regenerating axones. If the two stumps are not approximated, a terminal neuroma may develop from erratic growth of the proximal neuraxone.

Rate of regeneration has long been thought to be 1 mm. a day or approximately 1 inch in a month. Investigations have determined that growth is faster the higher the lesion and the nearer the lesion is to the nutrient cell body. Thus, in averaging the rate of growth in regeneration, the old figure remains acceptable.

In peripheral nerve injuries the survival time of denervated muscle is important. Although skeletal muscles atrophy about 30 per cent within 30 days and up to 80—90 per cent in 120 to 150 days, true degeneration usually does not occur until months later. Fragmenting of myofibrils and fat cell replacing muscle fibers then makes recovery impossible. Rate of degeneration varies from animal to animal and between different muscles in the same animal. There is no reliable data regarding the survival time of denervated muscle in man. Treatment of World War II nerve injuries, however, left the impression that maximum time for good functional recovery was 20 months, depending on the level of the lesion, the distance necessary for axonal growth and the amount and kind of physical therapy received.

The time-distance factor must also be considered in light of rate of regeneration of the nerve and the rate of degeneration of the muscle. Immediate reapproximation and suture of a transected peripheral nerve should result in satisfactory recovery of function in the denervated muscle because the neuraxone regeneration falls within the 20 month life expectancy of the muscle. Delayed suture lessens the chance of recovery.

Because of the internal structure of nerves with neuraxones collected in fascicles which branch distally changing size and position relationships, if a peripheral nerve is cut as with a razor, the ends of the proximal and distal stumps are mirror-like images. Removing a segment of the nerve, however, reveals gross dissimilarity of the two stump ends in the arrangement and size of the fascicles. Neuraxones have difficulty finding original pathways and functional recovery is seldom 100 per cent successful, 60-70 per cent being average for a segmented nerve trunk. In nerves innervating muscles of gross movement, this 60-70 per cent is adequate, but in nerves such as the ulnar or median, this percentage leaves considerable deficit in useful functional recovery.

Prime functions and objectives must be considered in evaluating a nerve injury. Level of injury; the time-distance factor; the loss or preservation of function of neighboring muscles; the social and economic status including cosmetic vs. function must be carefully evaluated.

"Serial" reinnervation occurs with most proximal muscles first gaining function as the neuraxones grow toward the periphery. A normal nerve upon percussion tingles distally along its course. Following transection, a blow distal to the division produces no tingling. As regeneration of neuraxones occurs, percussion below the suture site again causes tingling sensation and rate of sensory neurone growth can be estimated. Percussion directly over a neuroma always produces pain but is no indication of neurone growth. Electromyograms show no electrical potential with normally innervated muscles at rest; yet spontaneous and continuous action potentials are evident in totally denervated muscles. Chronaxie tests are also valuable in determining denervation and reinnervation. When a muscle is totally denervated, the chronaxie is 100 times greater than in the normally innervated muscle. Trophic changes also occur due to the fact that the autonomic fibers are also involved. Denervated skin shows increased skin resistance to electrical current because the sweat glands do not secrete.

Clinical and surgical considerations of peripheral nerve injuries include concussion and contusion which recover gradually with rest. Axonal disruption without interruption of the total nerve trunk produces "serial" reinnervation with more accurate reapproximation than is possible following suture of a divided nerve. Incomplete central type nerve lesions resulting from post-traumatic neurofibroma may cause complete loss of function. Excision and nerve end suture may be indicated but some functional impairment must be expected. Lateral type lesions with only one side of the nerve intact show a sharp line of functions totally

lost and those totally preserved. Suture is seldom successful because sharp angulation of the intact portion causes death of the axones; excision and resuture are deemed the best procedures. Complete division of the peripheral nerve trunk encourages optimum operating facilities because of the complexity of anatomical structure.

Closure of the gap between nerve ends requires nerve mobilization from adhering tissue, and perhaps joint flexion and nerve transposition. Immobilization for three weeks forms a fibrous union at the site of the suture. The gradual extension of the flexed joint should take three more weeks. Difficulty in relengthening after suture occurs because nerve tolerates only minimal stretching and must be so mobilized as to absorb no more than 30 per cent stretching over its entire length. Muscle function lost through nerve injury may occasionally be improved by tendon transplant or arthrodesis. Causalgia, a result of an incompletely divided nerve, in the opinion of the author should be treated with sympathectomy as a last resort. He considers causalgia to be caused by inflammation of surrounding tissues, vasospasm, ischemia and trophic changes. With treatment of the inflammatory changes, causalgia has been found to gradually disappear.

Physical therapy in the treatment of peripheral nerve injuries has included heat, deep massage, passive motion and electrical stimulation. The latter is considered controversial because its value in delaying muscle degeneration is based more on impression than on scientific fact.

Current Therapy of Elephantiasis of the Lower Extremity

T. J. Baker, Jr. (Department of Surgery, Section of Plastic Surgery, University of Missouri School of Medicine, Columbia, Missouri), AM. J. SURG., 96: 84-87, July 1958

A brief historical background regarding therapy of elephantiasis is presented in order to understand fully the present day concepts.

Matas, in 1913, outlined the necessary criteria for a diagnosis of lymphedema of the lower extremity. They are: (1) Mechanical obstruction of the lymphatics or veins, (2) hyperplasia of the collagenous connective tissue of the hypodermis, (3) gradual disappearance of elastic fibers of the skin, (4) a coagulable hard lymphedema, and (5) chronic reticular lymphagitis. He believed the disease was caused by secondary and repeated invasion of pathological microorganisms usually of the streptococcal variety. This theory as to etiology is the one probably most accepted today.

A detailed description of the surgical procedure and postoperative management is presented. In essence, the extremity is denuded and all diseased tissue removed. These areas are then resurfaced with split-thickness skin graft. Between the fourteenth and twenty-first postoperative day the patient is taken to the whirlpool tank to aid in removing any crusts that remain on the leg and to accelerate the return of function. No walking or standing is permitted until 30 days after the grafts have healed and all raw areas are gone. Ambulation is started slowly, with frequent rest periods. Elastic support must be worn constantly. Six photographs accompany the article demonstrating a satisfactory result.

Preliminary Report on Neuromuscular Function Testing of the Upper Extremity in Adult Hemiplegic Patients

G. Reynolds, K. C. Archibald, S. Brunnstrom and N. Thompson (Department of Physical Medicine and Rehabilitation, New York University—Bellevue Medical Center, New York City), ARCH. PHYS. M., 39: 303-310, May 1958

The inadequacies of standard testing procedures in evaluating the return of function in hemiplegic patients are apparent. The many factors involved in motion following an upper motor neuron lesion make it extremely difficult to standardize any type of testing procedure. These factors include spasticity, influence of posture, activity in other parts of the body, righting reactions, tonic neck and labyrinthine reflexes and grasp reflex. It is also noted that action against gravity and/or resistance may assist rather than inhibit responses of the hemiplegic patient. Examples are given of how misleading the results of standard testing procedures may be.

The great interest at present in the clinical application of reflex responses and neuromuscular facilitation motivated this attempt to measure the functional restoration in this type of patient. It is important to be able to analyze the benefits derived from these technics and to compare these results with those derived from other types of therapy. The authors present in this paper a test procedure for the upper extremity which they have found useful in the evaluation of the hemiplegic patient.

It is suggested that all testing be done with the patient in the sitting position as this is the most important position for function. Furthermore, muscles and muscle groups must be tested as components of mass movements rather than as isolated units. The common synergies of flexion and extension are described.

The test itself is divided into two portions: (1) the shoulder, arm, and forearm; and (2) the wrist and hand. The first section emphasizes control of movements, first as components of the typical hemiplegic movement synergies, then independently of these. It consists of six levels. The second section is based on a "type-specific" progression of functional activities. These measurements are given in detail, and the test form itself is reproduced.

The summary states that it would be desirable to stimulate further exploration of better methods of evaluating these responses in both the upper and lower extremities in all areas of upper motor neuron disease. Therapeutic technics using such responses could then be more effectively evaluated.

Simultaneous Recruitment of Sweating and Perception of Warmth in Man

Walter C. Randall, Clarence N. Peiss, and Robert O. Rawson (Department of Physiology, Stritch School of Medicine and the Graduate School of Loyola University, Chicago, Illinois), J. APPL. PHYSIOL., 12: 385-389, May 1958

Twenty-five experiments were carried out on 13 healthy, normal men, who were placed, nude, in a climate chamber in which the circulating temperature was gradually elevated. They first showed sweating on the dorsum of the foot with progressive recruitment of sweating on successively higher levels of the body. The forehead was the last area to produce sweat. Conversely, the sensation of warmth was first reported on the forehead, with successive appearance on the lower areas of the body with increasing temperature. To the authors, it therefore seems improbable that the same afferent receptors are concerned with the reflex origin of sweating and with the

excitation of the local sensation of warmth.

It is interesting that the hot sensation appeared on the forehead considerably in advance of the appearance of sweating. Sweating was established on the dorsum of the foot more than 25 minutes before it appeared on the forehead.

The experiment was ended by turning off the warm air circulator and opening the door of the chamber. Timing showed that sweating stopped within a matter of a few seconds—much too rapidly to have been induced by alteration in temperature of blood bathing the hypothalamus.

The experiments refute the opinion that human sweating always appears universally over the entire body. Several hypotheses are presented to relate sweating activity to spinal cord centers.

Reconstruction Versus Prostheses

J. J. Callahan (Stritch School of Medicine of Loyola University, Chicago, Ill.), A. M. A. ARCH. SURG., 76: 737-743, May 1958

Shapiro recently summarized: "Whatever its advantages, the prosthesis has not as yet been developed which is quite as good as the living head and neck of the patient's own femur even though the anatomy be somewhat distorted."

In a series of 50 cases, hip reconstruction proved preferable on the whole to prostheses, especially in the aged. Reconstruction was used for: nonunion of the neck of of the femur with extreme absorption from decalcification; aseptic necrosis of the head following any injury interfering with circulation of the head and neck of the femur; severe osteoarthritic changes; malformations of the head of the femur; subcapital fractures. Advantages of reconstruction include: early weight-bearing (as early as two weeks after surgery if plaster cast is applied); allaying of patient's anxieties regarding bone growth, eventual union, duration of waiting, metal sensitivity; and relief of pain.

Possible slight Trendelenberg gait which is not disabling, some restriction of hip flexion (making putting on and off shoes and stockings difficult but not a grave drawback), and varying degrees of leg shortening (1-2 inches in nonunion with severe absorption of the neck, or only ¼-½ inches in fresh subcapital fractures) are minor consequences compensated by the major advantages of enabling patients to continue comfortably with their normal activities.

Prostheses may be used only when internal fixation is not practicable (such as where the patient is past life expectancy—because of the risks of complications should operation not be successful). Prostheses in the young are opposed under all circumstances because: failure of treatment precludes successful alternative treatment later; available prostheses are too limited in size to ensure accuracy to fit the acetabulum. Disadvantages of prostheses include: intractable postoperative pain from sclerosis at articulation, and resultant leg shortening (about 3 inches) from removal of the prostheses and fusion for pain relief. Mechanical failures of prostheses are various: breaking, loosening, disintegrating, pitting, and tilting; plastic or Lucite heads may fracture or disintegrate, and are believed by some to be carcinogenic; metal carries problems of sensitivity and absorption at point of contact.

When fractures occur in the presence of malignancy, any procedure that will relieve pain, discomfort and disability is justified.

Five cases in the series are illustrated. Their salient features, exemplifying points made in the article, are presented in the legends to the accompanying illustrations.

Rehabilitation of the Severe Paralytic

Howard A. Rusk (New York University, College of Medicine, New York, 16, New York), POSTGRAD. M., 23: 616-623, June 1958

This article is a discussion by Dr. Rusk on two types of patients aided by rehabilitation—hemiplegics and paraplegics. He says that there are an estimated 1,800,000 hemiplegics in the United States, and that the magnitude of this problem is going to increase since 14,500,000 people in the United States are over 65 years old.

His treatment of the hemiplegic patient would start the day the patient enters the hospital with proper positioning and range of motion to prevent contractures. He emphasizes the importance of differential diagnosis to determine the cause of the cerebral vascular incident. A patient who has had a thrombosis is sat up the day he regains consciousness, and ambulation begins as early as possible. Walking is not started in a walker. Parallel bars are preferred because the reciprocal pattern is more normal and requires less concentration.

A short leg brace with a 90 degree stop is suggested to avoid clonus which starts in the toe. The brace places emphasis on the ball of the foot. The climbing reflex is automatic and should be encouraged for a proper walking pattern.

Dr. Rusk states that a patient of 60 who survives a thrombosis six weeks has no greater chance of a second stroke than any other person in his age group.

Paraplegia has only been a problem the last 12 to 15 years. During World War I, the mortality rate among these patients was 90 per cent in the first year. That was before we had antibiotics and a better understanding of nutrition, physiology, and urinary management of paraplegic patients.

Programs for the 2,500 World War II veteran paraplegic patients were begun in 1945. Ten thousand civilians became paraplegics also during World War II due to accidents in industry and on the highway.

Dr. Rusk believes in an early laminectomy, for without exploration it cannot be determined accurately whether the cord has been severed or not. Training can begin much earlier if this is known.

Training again consists of early ambulation. The importance of bracing is emphasized. High bracing is recommended for early ambulation and for the psychological value to the patient when it is possible to eliminate some of the upper bracing.

Training in the activities of daily living and in bowel and bladder scheduling is included. Most important is the vocational counseling. Even 60 per cent of the quadriplegic patients can do some gainful work. Dr. Rusk says that it is important to understand the potentials of the patient. He concludes that a properly trained independent patient can be an asset to society rather than a liability. Rehabilitation can add some life to the increased years that medicine has brought to the patient.

Our Abstracters for October

We are indebted to the following Association members for their assistance in the preparation of the abstracts appearing in this issue:

Rachel Adams	Carole McNeill
Joan Brewer	Florence Murley
Carlton L. Jones	Miriam Partridge
Jean Thibaut	Jean Cuthbertson
Sam Chelemsky	Elizabeth Davies

Book Reviews . . . . .

Stedman's Medical Dictionary. *Edited by Norman Burke Taylor, M.D., F.R.S.C., R.R.C.S. (Edin.), F.R.C.P. (Can.), M.R.C.S. (Lond.) in collaboration with Lt. Col. Allen Ellsworth Taylor, M.S., Classical Editor, University of Western Ontario; formerly of the University of Toronto. Ed. 19. Cloth; price $12.50. Pp. 1656; illus. Williams & Wilkins, Baltimore, 1957.*

A current medical dictionary is a basic professional tool. The expansion of medical terminology is well illustrated in that additions in the past four years have necessitated the inclusion of several thousand new words and one hundred more pages in the nineteenth edition of *Stedman's Medical Dictionary*.

The editors have organized this dictionary to give the user a maximum of information in a readily accessible form. Running headings are provided in the upper left hand corner to show the first main item on the page and the upper right hand corner shows the last item on the page. The definitions are clear and concise. The American spelling of words is used and the etymological derivation in Greek and/or Latin is given with each word. The names of the pharmaceutical preparations have been changed from Latin to English to conform to the latest editions of the United States and British Pharmacopeias. The Basle anatomical nomenclature is used. The noun modifiers are placed under the main entry, which facilitates the use of this dictionary, i.e.: glenoid; cavity, fossa, ligament, and surface.

New illustrations have been added and the old ones redrawn. Fifty-four anatomical tables and 40 pharmaceutical tables are included. The section on medical etymology will prove of value to many readers interested in the derivation of medical terms. The appendix is quite comprehensive including sections on weights and measures, symbols, stethoscopic abbreviations, proof readers marks, comparative temperature scales, comparative metric and English barometric scales, chemical elements, important microparasitic pathogenes for man and certain animals, nomenclature in Latin and English adapted by the Anatomical Society of Great Britain and Ireland with the Basle anatomical nomenclature equivalents, and Nomena Anatomica.

The primary words are in bold face type which is easily readable but the definitions are in smaller lighter type which is a disadvantage. The publishers undoubtedly selected this type to avoid increasing the size of this volume which now exceeds 1,700 pages. In spite of the disadvantage, this comprehensive current medical dictionary will be a valuable addition to a professional library.

Trends in Gerontology. *By Nathan W. Shock, Chief of Gerontology Branch of National Heart Institute and Baltimore City Hospital, Baltimore, Md. Ed. 2. Cloth; price $4.50. Pp. 214. Stanford University Press, Stanford, Calif., 1957.*

Current programs, research projects in Europe as well as America, and statistical data relating to gerontological problems have been brought up to date in this completely revised second edition.

Statistical data must be assembled slowly, and up to this time we have been depending generally on statistics available only through 1948. Now the author has been able to bring the figures up to date through and beyond 1950, including many in 1956 and even some in 1957. These statistics with pertinent discussion, relate particularly to population trends, income, health, and living arrangements. There is specific information about various retirement villages, location, and costs. The sociological aspects of the various problems are discussed wherever applicable and particularly as they relate to current community programs.

The chapter, Trends in Education, provides answers to many questions which are constantly being asked. The material reviews education for aging, research facts about learning capacity and age, courses now being offered for adults in preparation for aging, and also for training leaders for community programs, as well as research workers in this field.

The physiological problems are gone into in some detail, including a discussion of specific medical programs and other special medical research programs which are now being carried out in Europe and the United States. There is a detailed description of exact location and type of research now being carried on. The last part of the book is concerned with what is needed in research, what the goals may be, and the research potentials. Finally, recommendations for a Gerontological Institute with a complete organizational plan for such a program is presented in detail. Report on programs in Europe was not included in the first edition of this book.

This is a book of concise facts, presented in an orderly manner, easy to read, and yet containing much current reference material which has not been previously assembled within one book up to this time.

The author has been one of the pioneers to develop interest, study, and research in the field of geriatrics and gerontology, and is the author of numerous publications in these fields.

The Anatomy of the Nervous System. *By Sir Wilfrid Le Gros Clark, Professor of Anatomy, University of Oxford; and Archibald Durward, Professor of Anatomy, University of Leeds, England. Reprinted from Ed. 9 of Cunningham's* Textbook of Anatomy, *edited by J. C. Brash. Vol. 5. Cloth; price $7.50. Pp. 370 (835-1150); illus. Oxford University Press, New York, 1957.*

The present volume is one of four sections, now available separately, of *Cunningham's Textbook of Anatomy*, ninth edition. The small volume is divided into two parts; the central nervous system by Sir Wilfrid Le Gros Clark, and the peripheral nervous system, including the autonomic nervous system, by Archibald Durward.

After a short discussion of the elements of the central nervous system and of the cellular components of nervous tissue, Clark proceeds to a systematic discussion of the spinal cord, brain stem, cerebellum, and brain. For each region of the central nervous system there are given not only the gross structure but also the development, and in some cases, a short description of the microscopic structure. The section ends with a brief discussion of the meninges and production of cerebrospinal fluid.

This portion of the book is well written, and the material is presented in a lucid and logical manner; reading and studying are made easier by the fact that tracts and structures are not merely listed, but also deduced from embryology.

Sir W. E. Le Gros Clark is the author of many articles on the central nervous system, particularly on the thalamus and hypothalamus. He has also written two books on human

evolution and an interesting and informative introduction to the study of anatomy, *The Tissues of the Body*.

The discussion of the peripheral nervous system covers the cranial nerves and their ganglia, the spinal nerves with their anterior and posterior rami, and the great nervous plexi. The development and morphology of cranial and spinal nerves, the distribution to skin and muscles, as well as their blood supply, are given.

Discussion of the autonomic nervous system includes the anatomy and development of the two divisions of the system and their plexi. The innervation of the bladder and rectum, and that of the blood vessels are described.

This second section of the book is concise yet scholarly. The style is clear. Durward, who is not well known in this country, has published chiefly concerning questions of visceral innervation.

The type used in this volume is clear, and the illustrations and plates are well done, both in color and in black and white. The bibliography concerning the central nervous system is surprisingly short; that for the peripheral nervous system is more complete. This book, as do the other three portions mentioned earlier, contains the complete index of the ninth edition of *Cunningham's Textbook of Anatomy*. As a whole, the book must be recommended for the reference shelf of a physical therapist teaching anatomy.

Measurement in Physical Education. *By Donald K. Mathews, D. P. Ed., Associate Professor and Director of Research in Physical Education, State College of Washington, Pullman, Wash. Illustrations by Todd Wallis. Cloth; price $5.25. Pp. 359; illus. W. B. Saunders Company, Philadelphia, 1958.*

This is a textbook geared for the physical education student taking his first course in tests and measurements. The author's primary aims are to present the measurement materials with emphasis on the technics of test administration and the application of the results to the program; to discuss only essential statistical methods so that the student may scientifically evaluate the tests and analyze his data for application to the program; and to illustrate and describe accurately most of the tests in such a manner that they may be administered directly from the textbook.

The author explains the need for scientific instruments and methods of using them as aids in developing and conducting physical education programs. He has classified the testing instruments as follows: measuring strength, motor fitness tests, general motor ability, sports skill testing, cardiovascular tests, nutritional measurements and somatotype, evaluation of body mechanics, evaluation of social efficiency, and sports and health knowledge tests. Photographs and schematic drawings of equipment and test positions are clearly presented and numerous. The author includes many tables for physical performance.

Much new material pertaining to physical fitness and evaluation of body mechanics is included in the book. The book is an attempt to motivate students to use tests as part of the curriculum in a school program.

Psychosomatic Medicine: A Clinical Study of Psychophysiologic Reactions. *By Edward Weiss, M.D., Professor of Clinical Medicine, Temple University Medical Center; and O. Spurgeon English, M.D., Professor and Head of Department of Psychiatry, Temple University Medical Center, Philadelphia. Ed. 3. Cloth; price $10.50. Pp. 557; illus. W. B. Saunders Company, Philadelphia, 1957.*

Since the first edition was prepared in 1943 there has been so much advance in the documentation of the psychosomatic concept that the authors have revised their book to contain new clinical material, charts and tables, and suggestions for treatment. Part I is comprised of several chapters devoted to descriptions of the various types of emotional maladjustment and personal problems which often find expression through somatic complaints, and to the physician's approach for diagnosis and treatment. Part II contains 15 chapters giving information concerning the specific psychosomatic aspects of many areas of physical ailments. These include the cardiovascular, gastrointestinal, respiratory, and central nervous systems; also sexual functions, allergies, arthritis, and disorders of the eye and ear. There is an index as well as detailed chapter headings, and each chapter is followed by a bibliography. Illustrative case material serves to clarify the diagnostic conclusions and emphasizes the complex individuality of each patient's situation.

This volume is well organized, written in a lucid and interesting manner which commends it as a comprehensive survey and guide for psychosomatic orientation. The presentation is without bias or prejudice in its point of view so far as medicine versus psychiatry is concerned, the happy result of co-authors representing the two fields. There is much to caution the physician against confining his interest to the specific organ or tissue involved, and to warn the psychiatrist that physiological maladies can be overlooked through delimiting emphasis upon personality.

In addition to physicians and medical students, those who are professionally engaged in physical and occupational therapy, in medical and psychiatric social work, and in other contacts with people who are full- or part-time patients, will find much of value in this book, first as a stimulating and provocative review, later as a source of readily available information regarding specific psychosomatic conditions.

Therapeutic Heat. *Edited by Sidney Licht, M.D., Assistant Clinical Professor of Medicine (Physical Medicine), Yale University School of Medicine, New Haven, Connecticut, with 22 Contributors. Cloth; price $12.00. Pp. 466; illus. Elizabeth Licht, Publisher, New Haven, Connecticut, 1958.*

This is the second volume of the series called Physical Medicine Library which has been edited by Dr. Licht. The first volume Electrodiagnosis and Electromyography, appeared in 1956. Contributors to this volume are predominantly physicians in the field of physical medicine from the United States and the United Kingdom; however, there are representatives from the fields of physics, biophysics, and physiology. These lend strength to the volume.

The editor's purpose was to put into one volume a fairly comprehensive discussion of heat from standpoint of basic science, methods of application, and clinical usefulness.

This has been accomplished to a satisfactory degree. The chapters dealing with the basic science of heat are well done and readable. Those on the physics of heat, thermometry, biophysics of diathermy, and thermal radiation pain and injury are perhaps the most outstanding. The chapters dealing with the

methods of heat application are good, but for the student of physical therapy or the teacher of physical therapy the material will generally have to be supplemented by other references giving more specific technics of application. The chapters dealing with clinical application vary from good to general. Where the authors have attempted to include as much clinical research as has been done in the fields, the chapters are excellent, such as one on artificial fever therapy and one on heat in pelvic diseases. Other chapters could have been improved by the introduction of more clinical data. However, since there is a lack of clinical research in the application of many of the modalities, it is understandable that this material in some instances is not present.

The book is well documented, and bibliographies at the end of each chapter will be helpful to the teacher or student. The volume is fairly well illustrated with graphs and charts; for the most part instead of photographs, line drawings made from photographs have been used.

Since the chapters are written by a variety of authors, there is some contradiction, as in the case of ultrasound where one author will take an entirely different view of dosage than another. However, these do not detract from the over-all worth of the volume and for the most part the book is extremely well written and will be an asset to the teaching field for both instructor and student. Perhaps it will be most valuable to instructors in physical therapy teaching programs and as a reference guide for physical therapy students. When supplemented by a true technic manual, it may be adequate as a textbook for physical therapy students.

Fit to Teach. *Edited by Fred V. Hein, American Medical Association and the National Education Association Yearbook Commission and Interprofessional Committee. Cloth; price $3.50. Pp. 249; illus. American Association for Health, Physical Education and Recreation, Washington, D. C., 1957.*

This is the 1957 version of the 1938 volume of the same title and is the current Yearbook on Teacher Health of the American Association for Health, Physical Education, and Recreation. Approximately 70 people from a variety of professions shared in its production.

Fit to Teach is a broad survey of major health problems orientated to the frame of reference of the public school system. Specifically, it points out the need for the classroom teacher, the school administrator, and the community to be cognizant of teacher health status and its subsequent influence on the health and welfare of the students. The concept is set forth that "Every teacher is a health teacher by both precept and example, whether he realizes it or not." The term "health" is used in its broad connotation to reflect all aspects of the integrated personality including the mental, emotional, and social as well as the physical. The editors and contributors have succeeded in maintaining this theme throughout the book.

The discussions on interpersonal relations and mental and emotional health are particularly noteworthy and would be of value to any interested reader. However, the inference from statements such as "Sound physical health is the teacher's most desired characteristic," may reflect adversely on the statically disabled teacher who might be perfectly capable of superior teaching of both subject matter and value systems. It is doubtful that the editors and contributors intended this implication, but the inference can be drawn due to the lack of specific delineation of the various controllable and/or static health problems. Otherwise, the book presents an interesting, although rather general, discussion of the interrelating factors influencing teacher health plus pertinent suggestions and a listing of additional resource material.

It is difficult to ascertain or predict the audience for this volume. Although it is written especially for teachers or school personnel, it seems too "generalized" for use as a teacher training textbook and too "textbookish" *in style* for casual reading. The wealth of general "health" information presented could have been brightened, and indeed would lend itself well to illustrations and diagrams. Such an approach would be invaluable for the lay public as well as the teacher, or school administrator.

The reviews published here have been prepared by competent authorities and do not necessarily represent the opinions of the American Physical Therapy Association.

Our Book Reviewers for October

Nila Kirkpatrick Covalt, M.D., Medical Director, Kirkpatrick Memorial Institute of Physical Medicine and Rehabilitation, Winter Park, Florida.

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Janet A. Wessel, Ph.D., Associate Professor, Department of Health, Physical Education, and Recreation, College of Education, Michigan State University.

Jessie F. Waddell, Chief, Orthopedic Nursing and Physical Therapy, Michigan Crippled Children Commission, Lansing, Michigan.

What's New . . . . . .

For more information on items write to The Physical Therapy Review, 1790 Broadway, New York 19, N. Y.

New items which may be of interest to physical therapists will be mentioned in these pages each month. The accompanying explanations are made by the manufacturers and have not been investigated by the *Physical Therapy Review*.

---

101. Bed and Leisure Rest

A plastic "Bed and Leisure Rest," Air-Eez inflates firm or soft to suit user. The rest is equipped with a new type plastic valve for inflating by mouth, pump or vacuum cleaner; it deflates for compact storage. Electrically Dura-Welded Seams add strength to the product, which is packed with a special vacuum cleaner "adapter" for easy inflating. Crusader Mfg. Co.

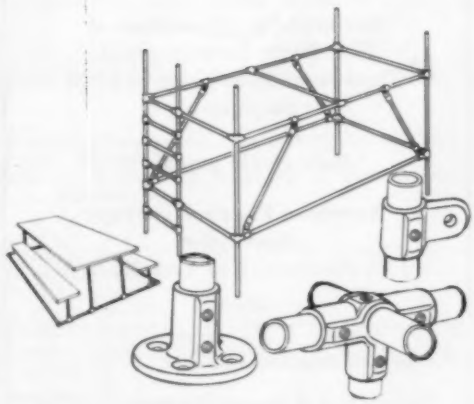
102. Rehabilitation Equipment Catalog

Scully-Walton's Rehabilitation Equipment Catalog contains 24 pages of items including bathroom aids, crutches and walkers, patient lifts, wheel chairs, wheel chair accessories, therapeutic devices, treatment tables, beds and respirators. Utility items include an all-purpose device for use during activities of daily living, one-arm knife, adjustable work table, elastic shoe laces and others. Scully-Walton.

103. Dimensions of Human Figure

Dimensions of the Human Figure by L. W. Sahley includes 48 charts based on measurements of 6,283 individuals. Dimensions were chosen to be useful for anyone who designs things for human beings. The charts present information on 1,198 dimensions in inches and centimeters. Description of how measurements were made are placed on each page and a title is given in laymen's language for each dimension. Medical terminology is also included in the index. Cleveland Designers and Consultants, Inc.

104. Slip-On Fittings



Hosking's Slip-On Fittings permit tube or pipe structures such as exercise frames to be built incorporating almost any angle as well as in circles or curves. The fittings are designed to eliminate pipe bending, threading and welding. Enclosures, tables, stands, frames can be built by unskilled persons. Strong, rustproof, and never need painting, the fittings are constructed of an aluminum alloy. John H. Hosking Co.

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Information for Contributors

The Physical Therapy Review welcomes original articles of interest to physical therapists throughout the world. Prompt reviewing and processing of papers will be assured if attention is given to the following suggestions.

Manuscripts are accepted with the understanding that they have not been published elsewhere. Contributions may be classified as "Feature Articles," "Suggestions from the Field," or "Case Reports." Feature articles are longer and deal rather extensively with the subject presented; suggestions from the field are brief and describe the instrument or device presented; case reports are short and concerned with discussion of a treatment for a specific type of disease or disability. All material should be presented in a clear, logical, and impersonal discourse.

Submit the original *manuscript* and one carbon copy (keep one carbon copy for your files). All written material should be typed, double-spaced with minimum margins of 1 inch on 8½ x 11 inch opaque white paper. Legends for illustrations, tables, references, and acknowledgments should be placed each on a separate sheet. When citing another author's work, a superscript numeral must appear in the body of the manuscript. The *references* must be accurate and numbered in the order in which they appear in the text. Include the name of each author, title of the article, name of periodical, volume number, inclusive pages, and date.

Illustrations should be protected by cardboard and the name of author and figure number written with soft pencil on the back. If *photographs* are used, sharp black and white prints on glossy paper are required, avoid distracting backgrounds. Graphs, charts, and line figures drawn with india ink on heavy white paper are necessary for good reproductions. Letters and figures should be large enough so that they will be readable when reduced for publication. Tables are reproduced more legibly when the carbon is reversed and typing occurs on both sides of the paper.

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STAFF PHYSICAL THERAPIST for Cerebral Palsy School-Clinic of Atlanta, Inc. Day School program, clinic and outpatient services for 100 children ranging in age from 18 months to 17 years. Five-day week, public school holidays, 2 weeks' vacation, sick leave, salary open. Send qualifications and work summary to: Mrs. Harold M. Seymour, Administrator, The Cerebral Palsy School-Clinic of Atlanta, Inc., Atlanta 7, Ga.

Physical Therapist for general, voluntary hospital of 560 beds. Registered therapist preferred; 40 hour week. Liberal personnel policies. Salary open. Apply Personnel Director, Allentown Hospital, Allentown, Pa.

Comprehensive Children's Rehabilitation Center, a unit of Children's Hospital of Buffalo, desires a qualified physical therapist for staff position. The Center is designed for diagnosis and treatment by team approach of five major groups of disabilities: amputees, cerebral palsy, mental retardation, epilepsy, and various neurological and neuromuscular diseases. Applicant to have ability and desire to: 1) work with handicapped children, 2) work as a member of the team toward solution of patient's problems. Work will be under guidance of a Board Physiatrist. Address: Medical Director, Children's Rehabilitation Center, 936 Delaware Avenue, Buffalo 9, New York.

PT to assume STAFF POSITION at cerebral palsy outpatient center. Expansion program starting to more than double the present area. Modern ranch-style building. Caseload soon to include all pediatric disabilities. Starting salary with no experience, $4,500. Liberal holidays, paid vacation, sick leave, 5-day week—8:30 to 4:30. For further information contact Vincent J. Privitera, Director, Cerebral Palsy Treatment Center, 808 Crockett, Amarillo, Texas.

PHYSICAL THERAPIST needed for full time work in new, well equipped office of two orthopaedic surgeons. Located in one of Chicago's beautiful North Shore suburbs. Salary is open, commensurate with experience and ability; five day week, paid vacation. Write Louis Scheman, M.D., 695 Roger Williams Avenue, Highland Park, Illinois.

GRADUATES OF APPROVED SCHOOLS FOR PHYSICAL THERAPISTS. California has positions open in State Hospitals, the Veterans Home and special schools for handicapped children. Require registration with California Medical Board. Liberal employee benefits and retirement plan. No experience needed to start at $415; first increase after 6 months; promotional opportunities to $530. Write State Personnel Board, Box 71, 801 Capitol Avenue, Sacramento, California.

Positions Available

Registered physical therapist. Woman. INDUSTRIAL hospital of large manufacturing plant. Attractive salary, Company benefits; 5-day week. Write Dr. J. F. McCahan, Medical Director, Western Electric Co., Hawthorne Station, Chicago 23, Illinois.

QUALIFIED PHYSICAL THERAPIST for outpatient cerebral palsy treatment center; new building; lib. sal.; holidays; sick leave; 3 wks. vacation in Aug. plus 10 days at Christmas. Contact Mrs. H. H. Rush, Adm., Les Passees Center, 49 N. Dunlap, Memphis, Tenn.

Staff Therapist and Assistant Supervisor. October and November. General Medical and surgical cases, In- and Outpatient Service. Opportunity for varied experience. Salary dependent on experience. Vacation, sick leave and social security benefits. Apply: Miss Mary Mason, Physical Therapy Department, The Johns Hopkins Hospital, Baltimore 5, Maryland.

WANTED IMMEDIATELY: Two qualified physical therapists for staff position in rapidly expanding orthopaedic clinic. Will consider recent graduates. Department under supervision of physiatrist. Liberal personnel policies. Good starting salary. Contact Arthur E. White, M.D., Anderson Clinic, S. 25th & Army-Navy Drive, Arlington 6, Virginia.

CHIEF PHYSICAL THERAPIST needed for well equipped department in association with nationally known crippled children hospital. Splendid, sound personnel policy and cordial atmosphere. Apply Personnel Director, Elyria Memorial Hospital, Elyria, Ohio.

QUALIFIED PHYSICAL THERAPIST for outpatient cerebral palsy treatment center. Liberal salary. Two months' vacation, sick leave. Liberal personnel policy. Contact Robert Schlitt, Director. Peninsula Cerebral Palsy Training Center, 901-24th Street, Newport News, Virginia.

STAFF OPENING: at Iowa Methodist Hospital, Des Moines, Iowa. Hospital has 400 beds, including Raymond Blank Memorial Hospital for Children. Construction under way of 120-bed rehabilitation unit. Excellent chance for advancement. In- and outpatient work. Competent professional staff and assistants. Excellent working relationships. Apply Personnel Director.

POSITION FOR SUPERVISING PHYSICAL THERAPIST AND STAFF PHYSICAL THERAPIST to work in Cerebral Palsy treatment center. Available December 1st. Caseload largely concerned with preschool children of normal intelligence. New facility, complete treatment and medical care; nursery school program. Salary scale for senior therapist $4,900 to $5,700; for staff therapist $4,300 to $4,900. Uniforms furnished and laundered. Social Security and retirement plan. Ten and half months, 35-hour week. Apply Mrs. Francis W. Schilling, Executive Director, Detroit Cerebral Palsy Center, 261 Brady, Detroit 1, Michigan.

Immediate placement for additional qualified physical therapists (male or female) for physical medicine and rehabilitation institute serving 2 hospitals in largest centrally located industrial center in Illinois. Full time medical supervision, 5-day 40-hour week, excellent salary range, additional benefits. Write: Business Manager, Institute of Physical Medicine and Rehabilitation, 619 N. Glen Oak Ave., Peoria, Illinois.

Positions Available:

CHIEF physical therapist to establish physical therapy section of NEW Rehabilitation Center for Children, and to supervise activities and personnel of section. Entire center and operation new.

STAFF physical therapist for work in above section. Salaries open and commensurate with qualifications. Refer replies to: Dwight M. Frost, M. D., Medical Director, 600 Doctors Building, Omaha 5, Nebraska.

PHYSICAL THERAPISTS: Staff positions. Opportunity for varied experience; 650-bed general hospital, near center of cultural and educational activities. Vacation, sick leave and social security benefits. Apply Personnel Director, Harper Hospital, Detroit 1, Michigan.

CHIEF THERAPIST for Children's Convalescent Hospital and rehabilitation center. Salary dependent on qualifications and experience. Liberal vacation, sick leave, and holiday benefits. Male or female. Apply Administrator, Convalescent Hospital for Children, Auburn Avenue and Wellington Place, Cincinnati 19, Ohio.

(continued on next page)

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Positions Available

WANTED: PHYSICAL THERAPIST (female) for full or part-time work in orthopedic surgeon's office. Write to Daniel B. Eck, M.D., 144 South Harrison Street, East Orange, N. J.

PHYSICAL THERAPIST, qualified, for 334-bed general hospital. Five-day, 40-hour week, paid vacation, sick leave, regular salary increases. Convenient location, excellent working conditions. Apply Personnel Department, Lakewood Hospital, Lakewood 7, Ohio.

PT's and Cerebral Palsy PT's—Modern program in San Francisco Bay Area. Req. grad. from approved school and elig. for Calif. regis. All civil service benefits; $358-$505 mo. Alameda County Civil Service, 12th and Jackson, Oakland 7, Calif.

Registered Physical Therapist, NEW GRADUATE, experience not necessary. Position available September 1, 1958. Salary open. Write to: Dr. Dwight Frost, Physical Medicine and Rehabilitation, University of Nebraska College of Medicine, 42nd and Dewey Ave., Omaha, Nebr.

OPENING for second registered physical therapist, Nov. 15, in Cerebral Palsy School in new air-conditioned building. Liberal personnel policies. Salary commensurate with qualifications. Write: Mrs. A. M. Inman, Director, 1601 Gatewood Ave., Greensboro, N. C.

Physical Therapist—Male or Female—for New Department—Salary open—Good Personnel Policies—Hospital fully approved. Apply: Robert M. Murphy, Administrator, Floyd Hospital, Rome, Georgia.

PHYSICAL THERAPIST: (Male or female): Staff position. 550-bed general hospital, 44-hour week, sick leave, paid vacations and holidays, group participating Blue Cross-Blue Shield, well-equipped dept., excellent starting salary, annual increments, congenial atmosphere. Apply: Personnel Director, Greenville General Hospital, Greenville, S. C.

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Staff Physical Therapist for new Physical Medicine Center specializing in hydrotherapy on outpatient basis. Five day week. $350 per month with increase of $25 at 6 months and 1 year. Write Medical Director, Hot Springs National Park Physical Medicine Center, Hot Springs, Arkansas, stating all pertinent information.

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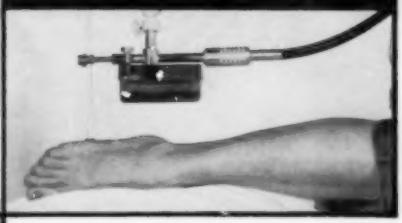
THE ADVANTAGES OF MICROWAVE DIATHERMY

BURDICK MW-1 MICROWAVE UNIT

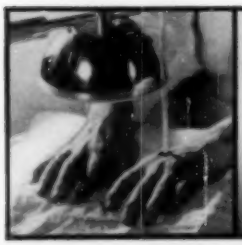
The physiological effects of microwave diathermy are deep tissue heating (up to 106° F. two inches deep in muscle tissue) with increased blood flow.

In microwave diathermy radiations may be reflected, focused or directed to the exact area desired. The floating arm with spacer permits easy positioning of the director, to the treatment area — without skin contact. Single power control and automatic timer insure simple operation and time-saving convenience.

With the Burdick MW-1 Microwave you have the confidence of superb workmanship backed by a nationwide service organization. The Burdick Corporation is happy to supply you with further information on Microwave Diathermy, or to give you a free demonstration of the MW-1.



Application to an injured ankle



Arthritic hands being treated

An effective treatment for bursitis

The Burdick Syllabus, a bulletin on physical medicine, will be sent you regularly on request.

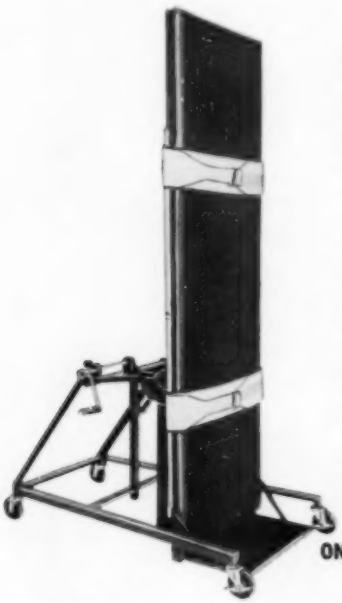
THE BURDICK CORPORATION
MILTON, WISCONSIN
Branch Offices:
New York • Chicago • Atlanta • Los Angeles
Dealers in all principal cities

Burdick®

THE *New* PRESTON STANDING TABLE

Preston Catalog Number PC 7194-U

This newly developed Standing and Treatment Table is manually operated by means of a hand crank. The sturdy base, constructed of angle iron, has a brown enamel crinkle-finish. The table top is 24" wide; 78" long; 32" high, and is upholstered with durable waterproof leatherette.



features . . .

EASE OF OPERATION—A special worm and gear arrangement permits tilting the table with minimum effort. The crank handle is near the top, obviating the need for the therapist's bending.

TILTS FROM HORIZONTAL TO VERTICAL position (from 0—90 degrees). Locks automatically at any desired angle.

EASY PASSAGE through narrow doorways and corridors. Over-all width held down to 29". Crank handle folds out of the way.

EASY TRANSFER of patient from bed or stretcher to table. Height of top—32" from floor.

EASILY MOVED with its four large 4" ball bearing swivel casters, two of which have step-on brakes.

COMFORT TO PATIENT is assured by upholstered top of durable waterproof leatherette. Footboard has a non-slip surface. Two heavy-duty restrainer straps hold patient securely on table. Square rails on each side of table permit placing restrainer straps or auxiliary equipment in any desired position.

PROTRACTOR to indicate degree of tilt from 0 to 90 degrees.

STORED IN SMALL SPACE—Requires only 29" x 44" for storage, with top in vertical position.

ONE YEAR GUARANTEE AGAINST DEFECTS IN MATERIAL OR WORKMANSHIP

THE *Only* QUALITY TABLE AT AN *Economy Price!*

Designed for EASE OF OPERATION, COMPLETE SAFETY and SIMPLICITY, with a resultant LOWER PRICE THAN COMPARABLE UNITS.

CATALOG NO.
PC 7194-U Standing Table, including Upholstered Top. Complete with 4" casters and two Restrainer Straps

$245

PC 7195S Additional Restrainer Straps 7.50

Prices F.O.B. New York, N. Y.

Send all orders directly to

J. A. PRESTON CORP.
175 FIFTH AVENUE, NEW YORK 10 N Y.